# AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

PERCIVAL SHELDON RIDSDALE, Editor

FEBRUARY 1919 VOL. 25 CONTENTS No. 302

IN THE PIKE NATIONAL FOREST, COLORADO

Seven Falls, South Cheyenne Cannon. Three hundred feet high, the ascent is made by 267 wooden and 20 stone steps


Entered as second-class matter December 24, 1909, at the Postoffice at Washington, under the Act of March 3, 1879.


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Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized July 11, 1918.



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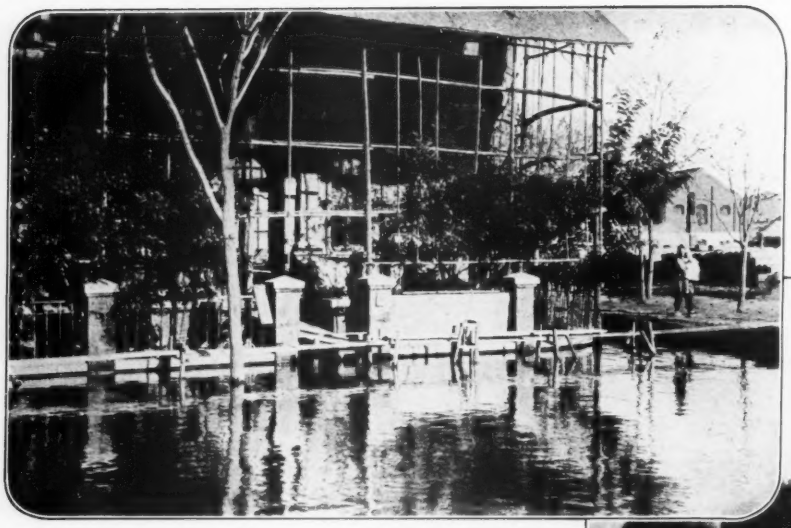
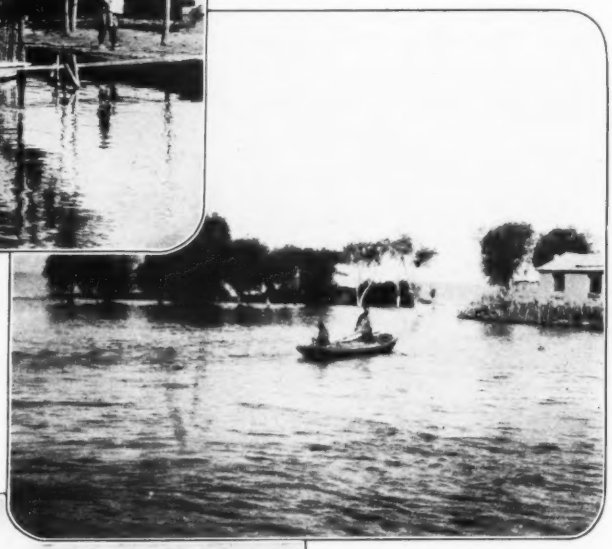


*Sad experiences in previous generations taught the people the danger of building their mud-walled houses on the level plains. Consequently in this vicinity the villages generally are perched on the high spots of land, and they were only partially submerged. After many weeks the waters slowly subsided, and here and there in the distance a few trees could be seen, or a forlorn village*



# North China Flood Pictures

*IN Chili Province, south of Tientsin, the dikes on either side of the Grand Canal gave way. Hundreds of square miles of land were submerged. We left Tientsin and traveled by steam launch over flooded fields a distance of thirty miles before reaching the broken end of the*

*standing partially above the waste of waters.*

*Greater Tientsin is divided into a number of foreign settlements or concessions—Japanese, British, German and Russian—all outside of and separate from the real Chinese city of Tientsin. Large portions of these concessions were flooded, with water over the first floor of the houses. —Photographs by courtesy of Mr. Frederick R. Sites.*

*Tientsin-Pukow Railway. Parts of the dikes remained standing slightly above the water level, and at these places the boatman utilized both man-power in towing, and wind power on their sails to move the heavily ladened cargo boats. Disease and epidemics threatened. A mad rush was made to get rid of the flood waters. Temporary dikes were rapidly built along the boundaries of the various concessions. The woman carrying the baby is walking on one of these dikes.*

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VOL. XXV FEBRUARY, 1919 NO. 302


# FORESTS AND FLOODS IN CHINA

BY HERMAN H. CHAPMAN

PERHAPS no phase of forestry has aroused so wide a public interest as the influence of forests upon stream flow. For over a century, the governments of modern nations, notably France, have proceeded on the basis that the denudation of mountain slopes caused ruin by unleashing the demons of flood and erosion, and that the only effectual means of control were reforestation of these slopes, combined with artificial barriers in the beds of the torrents. And the only possible method of bringing these great projects of restoration and protection to a successful conclusion has been found to be national control.

While France, under the constructive national forces of the republic, has gone a long way towards correcting the evil of denudation which followed the rampant individualism of the revolutionary era, America has been struggling towards a realization of the same truths. For over a century, not counting the colonial era, our nation took no effective steps to safeguard the public interests represented by the protection belts of forested mountains from which our rivers take their rise. Finally, the principle of national ownership and control was won, both in the west and the east, and we are buying back the lands in the Appalachians and White Mountains which passed from public control under a thoughtless and exaggerated individualism.

Meanwhile, China has been the principal sufferer from floods due to deforestation, and the best and most convincing examples of the devastation and ruin caused thereby may be studied in the great plains of north central China, whose rivers rise in steep mountainous country, which has been converted by unchecked forest

*Courtesy of "Asia"*

THE GREAT WALL OF CHINA

Looking out over the barren hills, one subtly feels that "immemorial mystery of North China, wrapping Peking like an imperial purple mantle, a somber northern inscrutability enfolding the Great Wall as inpenetrably as the mists obscuring its turrets."

exploitation into barren slopes devoid of vegetation.

It remains for an educated and keen minded Chinese forester, Dau Yang Lin, a graduate of the Yale Forest School at New Haven, Connecticut, and a pioneer in the awakening of new China, to present these facts to the world in a manner thoroughly convincing.

Mr. Lin is connected with the University of Nanking, and has devoted his entire time for three years to studying the effects of floods and the influence of forests on their control. In a pamphlet prepared by him and issued by the Chinese Forestry Association, entitled, "Forests and the Chihli Floods," he sums up the evidence. Mr. Lin does not rely on his own judgment, but quotes from the published statements of many prominent engineers, none of them foresters (until within a few years there have been no foresters in China), in support of his conclusions. These are:

1. That the river channels in the Chinese plains are incapable of carrying

A RIVER BED IN SOUTH MANCHURIA

Broad and stony, with almost no water, this shows clearly the evil results of deforestation. The region is also notorious for the many robbers which infest it. *Photograph by Frank N. Meyer*

ARTIFICIAL TERRACING

A striking picture taken in Shansi Province, China, showing other deforested mountains with artificial terracing to prevent further erosion.

to the sea the enormous discharge of water in times of flood.

2. That this condition is tremendously aggravated by the great quantities of silt carried down by the torrents, which the streams are forced to deposit as soon as their velocity is checked by the low gradient of the plains.

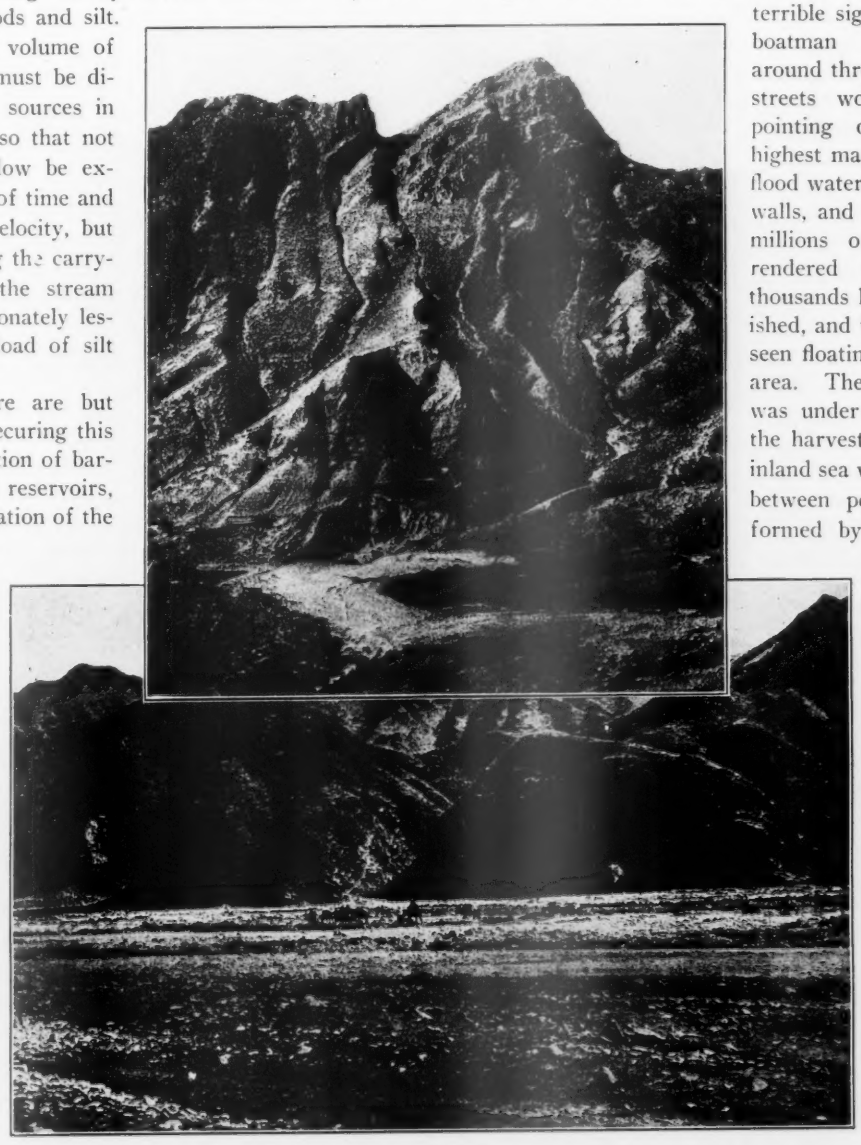
3. That it is impossible ever to improve these channels by deepening or by levees so that they will carry these floods and silt.

4. That the volume of water and silt must be diminished at its sources in the mountains, so that not only will the flow be extended in point of time and diminished in velocity, but that by so doing the carrying power of the stream will be proportionately lessened and the load of silt diminished.

5. That there are but two means of securing this result—the erection of barriers, dams and reservoirs, and the reforestation of the denuded slopes.

6. That the construction of dams and reservoirs is not only enormously expensive, but will *not solve* the problem, since these reservoirs will rapidly and completely fill up with silt, requiring their renewal perpetually.

7. That the reforestation of the slopes offers the only hope, and the most practicable method for checking this erosion of soil, and that without reforestation the plains of China will continually be subject to floods of greater and greater severity.



TYPICAL SCENES IN CHINA

Taken in Wu Tai Shan, Shansi, the upper picture shows starkly naked mountains, completely deforested, while the lower picture shows the consequent erosion at the foot of the hills and a caravan crossing through the dry river beds.

Few of us have any conception of the problem which the Chinese have brought upon themselves by their shortsighted destruction of these mountain forests—a result due directly to the complete absence of government ownership and control of these lands and by the exercise of the rights of private individuals to do as they pleased regardless of the welfare of the nation or posterity.

The brief account given by Lin of the great Chihli flood of 1917 may visualize the tragedy resulting from this selfish shortsightedness.

"While in Tientsin during the months of November and December of 1917, I had the opportunity of going through the flooded sections of this city, and it was a terrible sight indeed! The boatman who took us around through the flooded streets would indulge in pointing out to us the highest marks made by the flood water on the different walls, and also tell us that millions of natives were rendered homeless, that thousands had already perished, and that coffins were seen floating in the flooded area. The country which was under crop ready for the harvest is now a great inland sea with boats plying between points or islands formed by rising ground. The damage that has been done to crops and houses, the loss caused by stoppage of trade, interruption of railway traffic on the Peking - Hankow and the Tientsin - Pukow railways—this has been estimated at hundreds of millions of dollars. It is further estimated that in the city of Tientsin alone there are more than 120,000 flood sufferers, but thank goodness, most of these sufferers are being properly taken care of by different organizations and for their shelter thousands of mud huts have been put up.

"According to the latest report of the general Relief Committee, which gives detailed information of each of the hsien that has suffered from the floods, we learn that there are altogether 103 hsien or 17,646 villages affected

*Photograph by Frank N. Meyer*

ABOVE THE CITY OF CHIEH CHOU

View of the deforested mountains and the big dike the people have built to prevent a small mountain stream, which carried down much mud and stony debris from over-running their city.

by the floods, and that in these hsien there are as many as 5,611,759 sufferers who are either homeless or starving.

"When we come to think of prosperous and peaceful Switzerland as having a population of only 3,425,000 and an area of 15,975 square miles as compared with 5,611,749 sufferers and 15,000 square miles of flooded districts here, we at once comprehend the severity and the extent of devastation by the floods; and it is no wonder that they have been called phenomenal floods or something that Chihli province *has not experienced for the last 170 years.*

"Dr. P. E. Licent, a well-known scientist, who conducted perhaps a more scientific investigation through the flooded districts than anybody else, said: 'It is to be feared that next fall there will be another big flood around Tientsin, because the five rivers in this province are badly silted up and the embankments are in bad repair. For instance, along the Tze-ya Ho from Sienhsien to Tientsin, I saw twelve places at which the embankments are broken. Now it is on account of a long continued deforestation which has deprived the different watersheds of their protective covering that all these rivers have become silted up.' Then pointing to the map, he continued: 'I was traveling in the mountains near Paotingfu last August, and I saw hundreds of corpses washed down with houses, dead cattle, bowlders, etc., by the terrific torrents. In one place called Tai Lun Mung near Chochow, I saw eighty-four corpses floating gruesomely on a little pond. The terrible mountain torrents must have been responsible for such a state of affairs. China cannot hope to harness her water or regulate her streams until these torrents are stopped and to stop them permanently a systematic program of reforestation must be carried out.'"

The conditions caused by these floods tend to become steadily worse, as indicated by Dr. Licent. The river beds become completely filled with great masses of sand and silt, and the mountain slopes become furrowed into deep gullies through which the torrents roar in foaming, boulder strewn crests after every downpour. Mr. Lin cites the well known physical law that the carrying power of water increases as the sixth power of its velocity, so that an increase to ten times the rate of flow multiplies the power of the stream to transport mud and rocks by one million. This detritus in turn tears out and deepens the gullies, thus concentrating and increasing the velocity of the water. The vicious circle thus established has the most appalling results, and the devastation by a single flood of an area whose population and resources are equal to Switzerland, is the logical consequence.

Among the many citations quoted by Mr. Lin to show that reforestation alone offers a permanent solution of

*Photograph by Frank N. Meyer*

THE HEI SHUI KIANG OR BLACK-WATER RIVER

It passes the city of Chieh Chou and runs along mountains which have been totally deforested. As a result many landslides take place in the rainy season and the city is always in danger of being destroyed by the river.

*Photograph by Frank N. Meyer*

VIEW FROM THE LARGE DIKE

This looks over the city of Chieh Chou, Kansu, China, and shows how much lower the streets are than the brim of the dike. By digging a small canal and by reforestation, the situation would be enormously improved.

these evils which threaten to destroy whole provinces, is that of Mr. H. Vander Veen, C. E., consulting engineer to the Natural Conservancy Bureau, Pekin.

"As long as the slope of the water level is such that a current can be maintained strong enough to carry all the matter held in suspension along, no harm is done. But the natural slope of the plain is, for several rivers, insufficient. In such a case the river is therefore forced to get rid of the soil, held in suspension, along its way, consequently its bed gets raised and in the long run the river has to find another course, which it does by bursting its dikes to find in the lower lying land the place where it can deposit its burden, which it could carry no longer and for which no more room could be found in the old bed. This is the case more or less with every river running through the plain of China.

"*The only way to diminish this evil is to diminish the amount of soil brought down from the mountains.* And the reason for this enormous quantity of silt coming down from the mountains is that those mountains are bare so that during a heavy rain nothing prevents the water from rushing downward practically immediately after it has fallen, taking with it large quantities of soil,

*Photograph by Frank N. Meyer*

THE YELLOW RIVER "CHINA'S SORROW"

Several hundreds of feet of good cotton land have been eaten away during a few weeks. Not in vain is the river called "China's Sorrow" for life and property is never quite safe within its immediate neighborhood. Near Chao Yi, Shensi, China.

so that it reaches the river down below more like torrents of mud than of water. *Now if those mountains were planted with trees* not only would then the water be unable to take away so much soil but it would also reach the river gradually in a regular flow divided over a longer period and not within a few hours in fierce torrents.

"It is impossible, therefore, to lay too much stress upon *the enormous importance of reafforestation.* The deterioration of the various rivers in China and specially of those in this province, *would never have reached its present stage if deforestation had not taken place.* I say specially the rivers in this province because they all take their rise in the mountains west of the Peking-Hankow line, which for a great part consist of loess, a soil which is easily carried away by the rain.

"To build reservoirs in the hills in order to regulate the

*Photograph by Frank N. Meyer*

INSPIRING MOUNTAIN SCENERY NEAR SHAN HAI KWAI, CHINA

At the base of the mountain in the foreground of the picture a little growth of pine trees may be observed, otherwise all vegetation has been removed by the Chinese.

flow of the water, as has sometimes been suggested, is not only far too expensive but moreover wrong *as it does not do away with the problem of silt.* Sooner or later these reservoirs would become filled, consequently new ones would have to be built, a process which would have to be carried on into eternity.

"Reafforestation is most imperative, for without reafforestation the improvement of rivers can only be partly accomplished, but all these processes going hand in hand, the improvement of the hydraulic conditions of the country will be decisive."

China has been brought to this condition directly by the absence of a national consciousness and of organized methods of government by which the will of the people

*Photograph by Frank N. Meyer*

CARAVAN PASSING THROUGH A FORESTED REGION

This is at an elevation of about 9,500 feet above sea level. The muleteers have just set fire to a bit of dry brushwood, against express orders, and a nice forest of blue spruce and white birch is in full flame near Yang Sa, Kansu, China.

*American Red Cross Official Photograph*

THE GROUP OF ADMINISTRATION BUILDINGS

To the right are seen the rounded backs of the rows of huts built for the refugees at a total cost of about ten dollars per hut.

could be enforced to secure public welfare and restrain the greed of individuals, which will always, in the absence of such control, throw responsibility for economic consequences to the wind and grab for the immediate profit.

In the United States the struggle for public welfare and the restraint of ruthless individualism has been waged with more success. Just in time, our great mountainous public lands of the West were established as permanent national forests—and with the adoption of the policy of purchasing lands in the Appalachians and White Mountains, the economic error of permitting these slopes with their protective forest cover, to pass through the process of denudation which has been completed in China, bids fair to be checked in time.

*Photograph by Frank N. Meyer*

NATIVE WOMEN CARRYING BUNDLES OF FIRE WOOD

They start out very early in the morning to cut in the higher mountains and late in the afternoon they are back home again. In this way all chances of forests ever establishing themselves again are frustrated and lumber becomes more and more scarce in western China. Near Siku, Kansu, China.

It has never been claimed by foresters or engineers that results of equal destructiveness to those now occurring in China would follow the denudation of forested slopes in this country. But this is true *only* because the combination of conditions here is less dangerous. In the Chinese plain, the watersheds of those rivers comprise 60,000 square miles of very steep slopes, combined with a soil of loess or wind-placed silt—and these conditions are aggravated by the flat gradient of the rivers in the plains below, and by their extremely

*American Red Cross Official Photograph*

A GROUP OF FLOOD VICTIMS IN CAMP

At the "American camp" where accommodations were provided for a thousand families. The south exposure of the huts makes it easy to keep them warm.

dense population and great fertility. But the operation of physical laws of gravity and erosion are not confined to China. *To a lesser degree,* but to the full extent permitted by the topography, soil and rainfall, and by the stream gradients, these same results not only *will occur,* but *have already occurred* along the streams on the Atlantic seaboard and elsewhere. The reckless clearing of steep slopes in the Appalachians and in the wooded areas of Tennessee has caused extensive erosion, injured many rivers by silting, and destroyed millions in property values, while in the west, overgrazing of mountain slopes has been followed by rapid deterioration of valleys through unregulated movements of water.

*American Red Cross Official Photograph* HOUSING FLOOD REFUGEES

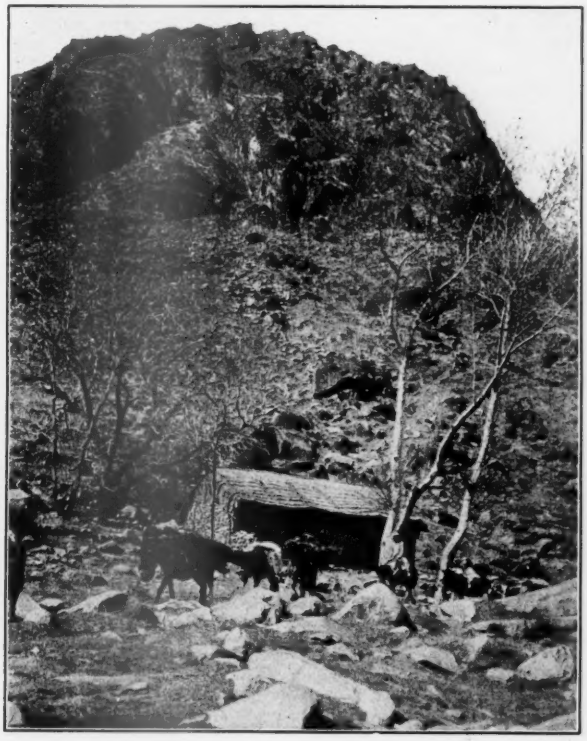
China and America joined hands through the Red Cross to provide and care for the refugees. This shows the huddle of mat huts in which refugees were living after the Tientsin flood before the American Red Cross camp was constructed.

Why is a forest cover the only solution of this problem? Because the damage is evidently caused by the combination of velocity, a function of volume of flow, and silt, which is the direct result of velocity and volume, and both these conditions are due to the

*Courtesy of "Asia"*

THE CAMEL—TIRELESS SERVANT OF THE MONGOLIAN

Symbolizing to the European all the mysticism and romance of the desert —to the user of camels in China they are merely "indispensable utensils."



*Photograph by Frank N. Meyer*

ON THE ROAD FROM PEKING TO WU TAI SHAN

A halting place along the road where one can obtain a cup of tea and some coarse oatmeal cakes. A very sterile region and yet scenically very interesting.

*character of the surface receiving the rainfall.* Dams are inadequate because by the time the water *reaches the streams* it is too late to control either its velocity or its burden of silt except at enormous expense. But the forest cover controls both factors automatically. From the time the downpouring rain strikes the first or topmost portion of the tree canopy, until the clear water trickles or oozes into the streambeds below, the forest interposes a complete succession of natural barriers to floods and silt. The force of the rain on bare soil dislodges it and hardens the surface. The drainage from such a surface is rapid and complete, carrying sediment from the very point of impact, and causing the gullying to begin in every direction. Rain falling through a forest canopy drips gently to earth, upon a carpet of waterholding litter and humus below which the soil is kept porous by protection from rain, by root penetration, and by the humus itself. The surface litter forms tiny dams in every depression and retards the formation and flow of surface water, replacing it with seepage. Not only is the erosion of soil from the surface prevented, but the water is strained and kept clear. When abnormal rainfall swells the streams, their erosive force is kept low by the absence of silt at their sources.

A STRIKING EXAMPLE OF ARTIFICIAL TERRACING

From this point one may gaze far over this unknown land where hill after hill shows artificial terraces, painfully and patiently built on deforested mountains to prevent further erosion.

Mr. Lin has contributed information of inestimable significance not only in China but throughout the civilized world, regarding the absolute necessity of maintaining forests on mountain slopes as the one adequate means of protecting fertile plains and rivers, and preventing destructive floods. But not until China has fought and won the battle for national

WU TAI SHAN, SHANSI PROVINCE, CHINA

Bottom lands buried in waste from deforested mountains.

consciousness and a national government responsive to the needs of the people, can she hope to solve this tremendous internal problem. Just as the physical laws operating to destroy the plains of China as a consequence of forest denudation, are world wide in their application, so the principles of government of the people, by the people and for the people are the only certain methods for securing permanent prosperity and contentment, whether they apply to Caucasians, Mongolians or South Sea Islanders. The Chinese have the natural intelligence to distinguish between despotism on the one hand and rampant individualism on the other, such as caused France to lose considerable portions of her mountain forests. But it takes more than knowledge to secure results. China's barren mountain slopes must be reclothed with forests in order that equable stream-flow may be maintained and her people in a measure protected from the terror of flood. The *will to fight* the battle for true democratic government in which order and efficiency is made subservient to the common good—this is the need of China today—and the first fruits of such a victory will be the creation of a national policy for reforesting the mountain slopes of northern China.

*Photograph by Frank N. Meyer*

LARCH FOREST

The last bit of larch forest left upon a northern mountain slope near the Tchai Ling Sze temple in the Wu Sai Shan region, Shansi, China. White tailed deer and wolves live here in this secluded remnant of the once extensive forest which covered all the now so appallingly barren slopes.

DEFORESTED MOUNTAIN SLOPES

Feeble efforts at farming may be plainly seen in the foreground. Wu Tai Shan, Shansi Province.

## THE NEW SPRING SAW

WITH the aid of a new saw that has lately been introduced, it is claimed that a strong boy or woman is able to cut more wood than two experienced lumbermen equipped with a standard crosscut saw. In support

*International Film Service*

A SAW ANY ONE CAN USE

With this mechanism a boy or growing girl can handle any piece of cordwood that may be brought in to cut up for firewood. It requires but little muscular strength to operate it, and is said to work so smoothly as to attract the attention of the Government experts.

of this claim is the record made during a contest conducted a short time ago.

Two men with a crosscut saw mastered an 11-inch

*International Film Service*

CONGRESSMAN RAKER OF CALIFORNIA OPERATING THE SPRING SAW

This enables one person to do as much work as two ordinarily accomplish with a standard crosscut blade.

chestnut log in 92 strokes, while one man, with the new machine saw, accomplished the same work in 70 strokes. The implement consists of two steel arms actuated by a powerful connecting spring. A bracket is attached at the fore end of each of the members, and to these the blades are clamped. To operate, the saw is merely drawn back and forth in the usual manner, all of the necessary pressure being exerted by the spring. The entire contrivance weighs only 12 pounds. It is especially suited for the farmer who does not wish to incur the expense of purchasing a power outfit for cutting fuel wood. In addition to cutting logs, it may be employed for felling trees of medium size.—(*Popular Mechanics*).

## ITALIAN GOVERNMENT BUYS TIMBER

AN INTERESTING and highly significant development with respect to the export lumber market has taken place within a short time, says a dispatch from New Orleans. The purchase, by commissioners representing the Italian Government, of 3½ million feet of yellow pine timber (specified of "Southern pine merchantable grades") for delivery at Gulf ports to be moved, via ships supplied by purchaser, to Italy. This sizable order was placed with the Southern Pine Emergency Bureau, which now is distributing the business among the Southern pine mills east and west of the Mississippi. It will be inspected at the mills by Association inspectors and shipped to designated ports to await the cargo-steamers, which are to be furnished by the buyers.

The order is noteworthy and important not only because of its size, but because of its indication that post-war lumber-buying for European countries may be handled largely by government commissions—which in their turn will deal with organized central agencies in preference to making direct purchases from the individual mills. It is not officially settled that this method will be adopted, but in addition to the Italian transaction noted above, there have been intimations very recently that France and England will buy lumber in this country through the "high commissions" which have handled their war-time purchases. The very important question of ocean tonnage, which has bothered students of the export market more than a little, may be disposed of if the business is handled upon the lines indicated, sellers making delivery at American ports and buyers providing cargo space.

## SUBSTITUTES FOR HICKORY IN THE MANUFACTURE OF HANDLES

SPECIFICATIONS for handles for intrenching tools were prepared during the war by the Forest Products Laboratory at Madison, Wisconsin, allowing seven substitute species in place of hickory and also certain minor defects, thereby making possible greatly increased production for this class of material and at the same time giving satisfactory handles.

# THE USES OF WOOD

## WOOD USED IN VEHICLE MANUFACTURE

BY HU MAXWELL

**Editor's Note.—This is the tenth story in a series of important and very valuable articles by Mr. Maxwell on wood and its uses. The series will thoroughly cover the various phases of the subject, from the beginnings in the forest through the processes of logging, lumbering, transportation and milling, considering in detail the whole field of the utilization and manufacture of wood.**

NEARLY every kind of tree that grows to usable size in this country fills a place in vehicle manufacture or repair, either in shop or factory, or on the farms or highways where wagons and sleds are made or mended. So wide is the range of vehicles, as to sizes, kinds, and the places which they are expected to fill, that nearly any billet of wood, large or small, may give service as a sled sole, singletree, pin, crossbar, standard, spreader, neck yoke, axle, or something else that is helpful in making or mending vehicles. Statistics compiled in factories show much but not all of the wood consumed by vehicle makers or repairers. Teamsters on highways, farmers in fields, workmen with teams everywhere, need wood at times to make repairs, and often they go to the nearest forest, if one is convenient, and cut the piece they need. The people who do this put to use, somewhere and at sometime, practically every kind of wood that grows in America. It is a sort of unwritten law that the driver of a vehicle must be able to make repairs of certain kinds when he happens to be out of reach of a shop. It has always been so; for Homer, writing of the siege of Troy, refers to a similar custom then: "His sounding ax lops green limbs from a sycamore to spoke a chariot wheel." The drivers of sleds, carts, and wagons have been swinging their axes ever since that time in woods and forests to procure wagon material to meet emergencies.

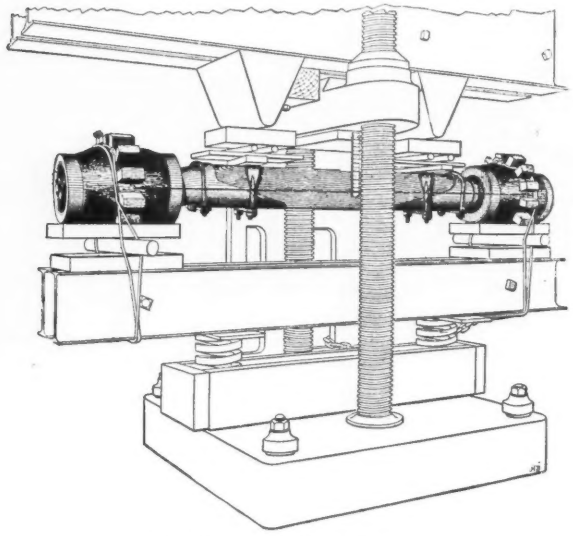
However, a discussion of the vehicle industry must here be confined to a narrower range than that which goes back to Homer's time, or to the activities of the repair man who mends and patches by highways and waysides wherever accidents occur. Up-to-date manufacturing and present day statistics must hold chief place.

Investigators for the government have gone pretty

RAW MATERIAL FOR AXLES, HUBS AND FELLOES

This scene is in the hardwood region of Arkansas and is strictly up to date. The high grade oak is on its way to the mill for conversion into wagon stock to meet a portion of the extraordinary demand for tens of thousands of heavy wagons for our armies in foreign lands. Only the best wood is acceptable for this use.

fully into the industry which makes wagons, particularly as to the woods used in factories, though little attention has been given to the woods employed and the work done by individuals and in small shops which cannot be classed as factories. A summary of the investigations by the government shows that forty-two kinds of woods are worked into vehicles by factories in the United States, and that the total amount was approximately 740,000,000 feet a year in the period immediately preceding the war. The total is now probably much more. Forty-two woods are listed by name, but the actual number of species is much larger; because in most cases the listing is by genera, and different species are not mentioned by



HOW WAGON AXLES ARE TESTED

The above picture represents the type of machine employed by wagon manufacturers and by the Government in testing axles to determine their strength. Pressure by means of the powerful screws is applied until the axle is forced to give way; but the applied pressure is measured at the various stages and the information thus obtained is of future value.

name. For instance, all pines are classed as one, though there are thirty odd pines; all oaks as one, and there are more than fifty oaks; all hickories as one, though there are a dozen, all ash as if but one existed, but there are several, and so on down the list. Instead of only forty-two vehicle woods, as the list shows on its face, the number doubtless exceeds 150 if each species is duly credited with its share.

But accepting the figures as they are given, the vehicle makers use seven foreign woods, seven domestic softwoods, and twenty-eight domestic hardwoods. All the foreign species enumerated are hardwoods; so it turns out that of the forty-two woods, thirty-five are hardwoods. Measured in feet, the hardwoods total 702,264,693, the softwoods 36,878,444; expressed in percentages, the hardwoods constitute 95 per cent, the softwoods five per cent. The use of foreign woods in the vehicle industry are here shown:

| | FEET | | FEET |
|---|---|---|---|
| Mahogany | 516,000 | Padouk | 1,000 |
| Eucalyptus | 40,000 | Doncello | 330 |
| Circassian walnut | 16,820 | Spanish cedar | 250 |
| Rosewood | 1,000 | | |
| | | Total | 575,370 |

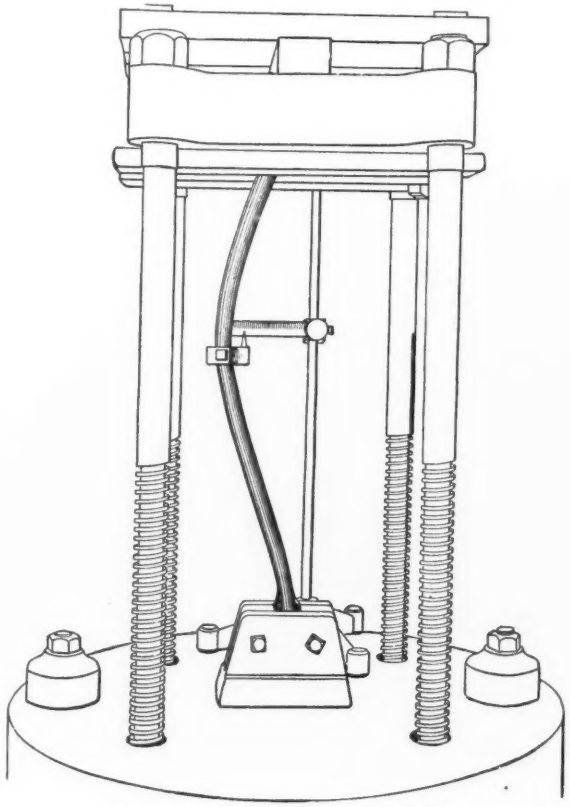
The names and amounts of the seven softwoods which contribute to the vehicle supply follow:

| | FEET | | FEET |
|---|---|---|---|
| Pine | 33,077,055 | Hemlock | 448,678 |
| Cypress | 1,320,951 | Redwood | 259,000 |
| Fir | 934,610 | Cedar | 2,500 |
| Spruce | 835,650 | | |
| | | Total | 36,878,444 |

The list below names the hardwoods used annually in the American vehicle industry:

| | FEET | | FEET |
|---|---|---|---|
| Hickory | 239,483,910 | Hornbeam | 126,000 |
| Oak | 212,918,361 | Locust | 110,350 |
| Yellow poplar | 48,665,960 | Hackberry | 100,000 |
| Ash | 43,974,668 | Buckeye | 63,419 |
| Maple | 35,863,267 | Sycamore | 62,600 |
| Cottonwood | 33,278,658 | Cherry | 39,650 |
| Elm | 31,296,922 | Butternut | 11,500 |
| Red gum | 26,650,314 | Magnolia | 9,500 |
| Birch | 14,267,125 | Blue beech | 5,000 |
| Basswood | 6,418,308 | Cucumber | 3,800 |
| Beech | 5,497,308 | Applewood | 1,000 |
| Tupelo | 1,067,600 | Catalpa | 500 |
| Chestnut | 972,809 | China tree | 500 |
| Osage orange | 439,026 | | |
| Black walnut | 390,450 | Total | 701,687,940 |

Though numerous woods are used in a small way in vehicle making, comparatively few are employed in large amounts. The two most important are oak and hickory. All others combined do not equal the amounts of these two. They contribute sixty per cent of the whole supply. No other industry is so dependent upon one or two woods, except shuttles and lead pencils, in each of which



METHOD OF TESTING BUGGY SPOKES

The strain on a buggy spoke comes from endwise pressure, and if the spoke is overloaded it bulges at the middle. The machine represented in the above picture delivers and measures pressure of that kind, and the behavior of the spoke is shown. Tough woods bend, but brash woods break under that strain.

a single wood exceeds all others combined. For vehicles oak and hickory are fairly evenly matched in quantity, but hickory is the leader. Its place is in light vehicles like carriages, buggies, carts, and racing sulkies where elasticity or resiliency is highly essential. Oak goes more into heavy wagons where elasticity is not of first consideration but strength is accorded the leading place. The

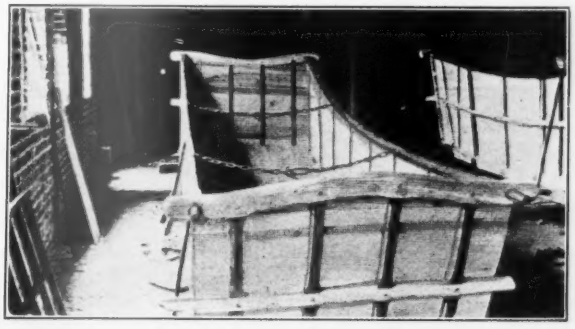
WATER WAGON WITH WOODEN TANK

This vehicle, serviceable for the purpose intended, represents a rather unusual use for wood in wagon making. The work must be well put together or the joints will leak as the result of jolting over rough roads. The tank here shown was manufactured at York, Pennsylvania, by the A. B. Farquhar Company. The tank's capacity is ten barrels.

two woods, oak and hickory, are dissimilar in many of their qualities.

The average strength of hickory is about thirty-three per cent greater than that of oak, when both are well seasoned, but the strongest oaks are not below medium hickory in strength. Hickory is the tougher wood, and in point of elasticity, or the ability to spring back when bent, it averages about fifteen per cent superior to oak.

Every kind of wood varies greatly in strength and elasticity when one sample is compared with another, and hickory and oak are no exceptions. For that reason it is necessary to select these woods carefully for vehicles, to make sure that each will be equal to the duty assigned it. Averages have been worked out by elaborate tests; and dimension stock is cut in sizes which will assure sufficient strength. Most large vehicle factories maintain testing apparatus

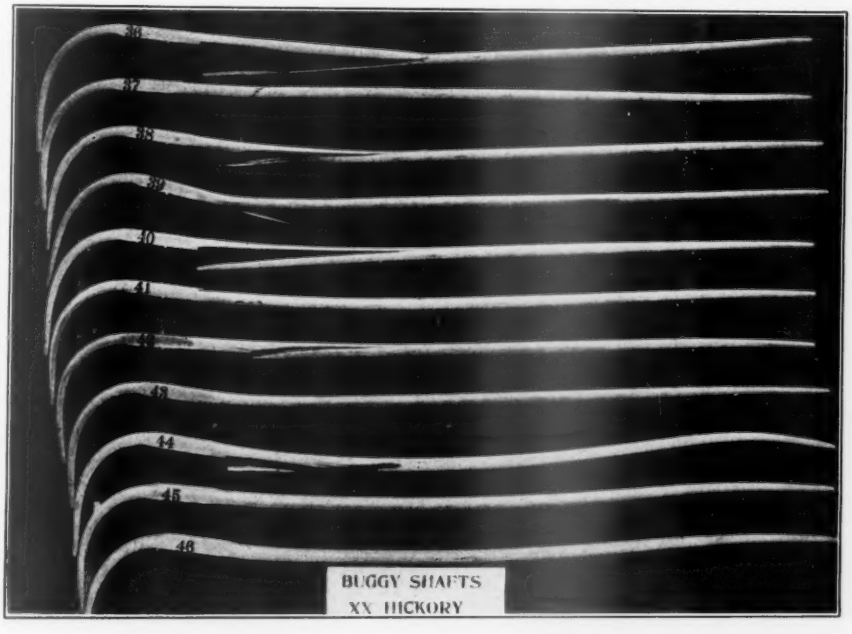


A RELIC OF OLDEN DAYS

The body of an overland freight wagon that crossed the plains of the far west before the first railroad was built west of the Mississippi River. The exterior wooden braces and the stay chains across the bed give additional strength and increase efficiency on rugged roads. Such a bed held enough merchandise for a four or six horse load.

of their own; and the government laboratory at Madison, Wisconsin, has gone thoroughly into the matter of vehicle woods and has compiled information available to manufacturers who care to use it.

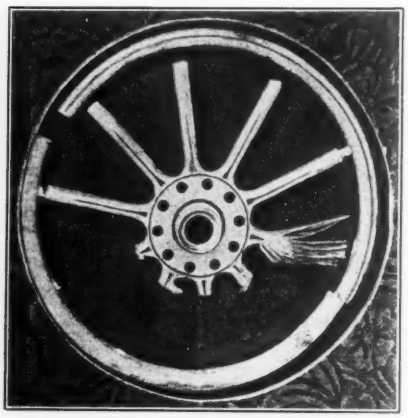
Hickory's best use is as poles, shafts, reaches, rims, and spokes for light vehicles; while oak serves best as spokes, felloes, hounds, tongues, bolsters, axles, hubs, and other parts of the running gear of large wagons. Other strong woods employed in considerable amounts by wagon makers are ash, maple, elm, birch, beech, Osage orange, and locust. Some of these are selected for particular parts. Of ash they make spokes, standards, and axles, and occasionally beds for ore wagons and frames for automobiles. Maple is very strong and it is often made into heavy axles. Elm is tough and is one of the best woods for long spokes in extra large log wagons. Birch and beech fill places similar to those filled by maple and ash. Osage orange, or *bois d'arc,* has a special place. It has often been selected in preference to




WHAT MIGHT HAPPEN IN A RUNAWAY

Manufacturers of buggies put the shafts to the severest tests to determine strength and toughness, and to discover defects. Only those which come through the ordeal unmarred are considered suitable for high-class vehicles. The accompanying illustration shows some of the defects which may be discovered by tests. The unfits are, of course, rejected.

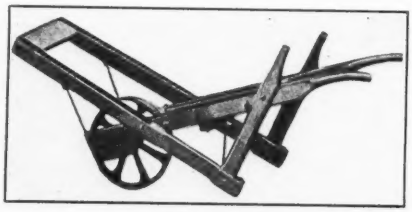
all others for felloes of wagon wheels which are expected to see service in the hot, dry regions of the southwestern part of the United States, in Kansas, Oklahoma, Texas, and westward. It is extremely strong and durable, but the chief characteristic recommending it for felloes is its small tendency to shrink or swell in dry or wet situations. The tire on an Osage wagon wheel seldom becomes loose during the trying times of the hot, dry summers of the Southwest, because the wood does not shrink. Under similar conditions, tires can scarcely be kept on wheels made of other woods. In running through deep sand, the paint is quickly worn from the felloes. Most woods, when not covered with paint, soon absorb water when exposed to dampness; but an unpainted Osage orange felloe is polished by sand and becomes smooth like horn, and moisture has little effect on it. Nevertheless, it has its drawbacks, one of which is its lack of elasticity. Jolting over rocks is apt to break the felloe. It does best in hot, sandy roads. An agreement recently entered into among wagon manufacturers has for its purpose the elimination of this wood as a wagon material, because of the increasing difficulty of procuring it. Though it has been widely planted as shade and hedge growth, the commercial supply has always come, for the most part, from its natural range in Texas and Oklahoma, where its original home did not much exceed an area of ten thousand square miles. That is a small range for a commercial tree, and the supply has become very limited.



RESULT OF OVERLOADING A WHEEL

The strongest, toughest wood in the world has its limitations. Overload it and it will crush. The stubs of broken and twisted spokes in this picture betray the enormous strain under which they gave way. They are of hickory. No other wood, under the same circumstances, would have come through with as little wreckage.

Locust is a hub wood for light vehicles. Its extraordinary strength and durability, in addition to its hardness, qualify it for use as hubs. It holds spokes firmly, resists strains and twists which would break most woods, and decay has little effect on it in many years. Elm is also a hub wood, but its place is in heavy wheels instead of light, and it is a competitor of oak in the hub factory.

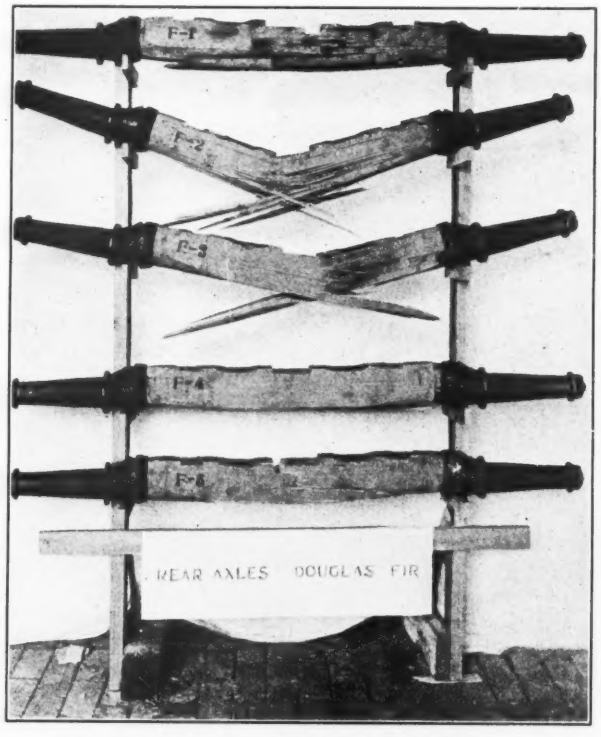


A SMALL BUT USEFUL VEHICLE

All of the important wheeled appliances of transportation are not drawn by horses, oxen, or driven by motors. The wheelbarrow in some form is with us always, and there are different forms of this lowly implement. Some have one wheel, and some two, but they all are propelled by pushing. The pattern shown in the picture is for use on factory floors.

Hornbeam is very strong and hard, but the total demand for it is not large, for the reason, among others, that it is not abundant and is procured with difficulty, but it fills a special place in the vehicle industry, being preferred as tongues for very large and strong logging wagons and carts.

The beds or bodies of wagons call for special woods, and the choice falls on yellow poplar, basswood, tupelo, cottonwood, and red gum. The wood for bodies must be light, tough, fairly strong, not inclined to split, and it must possess excellent finishing qualities. The finely-smoothed surface must paint well, for the show part of a wagon or carriage is the body. The lumber for the bodies or beds of farm and road wagons is known as box boards in the market, and though various dimensions may be had, boards from thirteen to seventeen inches wide, clear and sound, constitute the highest class. The foregoing list of vehicle woods contains no mention of willow, yet some willow box boards are used with satisfactory results. They are probably classed in statistics as cottonwood, or "brown cottonwood."




BROKEN IN THE INTEREST OF SCIENCE

These Douglas Fir axles did not reach their present condition by accident or ordinary usage. The Government's testing laboratory at Madison, Wisconsin, broke them by powerful machinery to determine what loads they were capable of carrying. Compared with other woods the showing was satisfactory.

Fine carriages and automobiles display high grade wood finish, the automobile more of it than the carriage. The government statistics covering vehicle woods (and there are no

other statistics worth the name) do not distinguish between horse-drawn and motor-driven vehicles; consequently, it is not practicable to quote figures giving the woods used in each class; but it is a matter of common knowledge and observation that the automobile now demands most of the fine woods, both foreign and domestic, employed in the vehicle industry. The leading native woods appearing in such finish are birch, black walnut, sycamore, cherry, and butternut; and all the foreign woods on the list belong in the finish class.

THE FAMOUS CONESTOGA WAGON

This is not a picture of a replica of the famous Conestoga wagon, but of the genuine article, though one of the last survivors of the romantic days of old, when wagon transportation was the only kind across states. This photograph was taken at Altoona, Pennsylvania, and was made available for this illustration by the courtesy of the Pennsylvania Railroad.

Whether vehicles are drawn by animals or driven by motors, they belong in two general classes, those for pleasure and those for business. The line of separation is not always clearly drawn, since considerable pleasure may be derived from the business wagon, and the pleasure vehicle may contribute to business. Each class is subdivided to an almost infinite degree. A vehicle need not go on wheels, for the sled or sleigh is as much in evidence as the wagon or carriage, but within certain regions. No marked difference in the material that goes to make a wagon or to make a sled can be pointed out. Strong materials are needed in each, and woods suitable to make the bodies of one are also the kinds wanted for the other. The cutter's artistically-painted bed calls for as high a grade of yellow poplar, gum, maple, or basswood as is demanded for the panels and body of the carriage; and the bob-sled, block-sled, stoneboat, and yankee jumper are constructed of materials similar to those consumed in the manufacture of the grocery wagon and the ox cart.

The hickory racing sulky is said to have made the American race horse famous. The wood is so strong, tough, and resilient that a sulky of extreme lightness, and of remarkable endurance has been the result, and it is without an equal or a rival. This made possible the lowering of racetrack records, and in many instances the sulky wins races for which the racehorse receives the credit. However, the fact has been recognized that the hickory tree has had its part in much racing history which has redounded to the credit of American racetrack sportsmanship.

The trade wagon's place in the daily business affairs

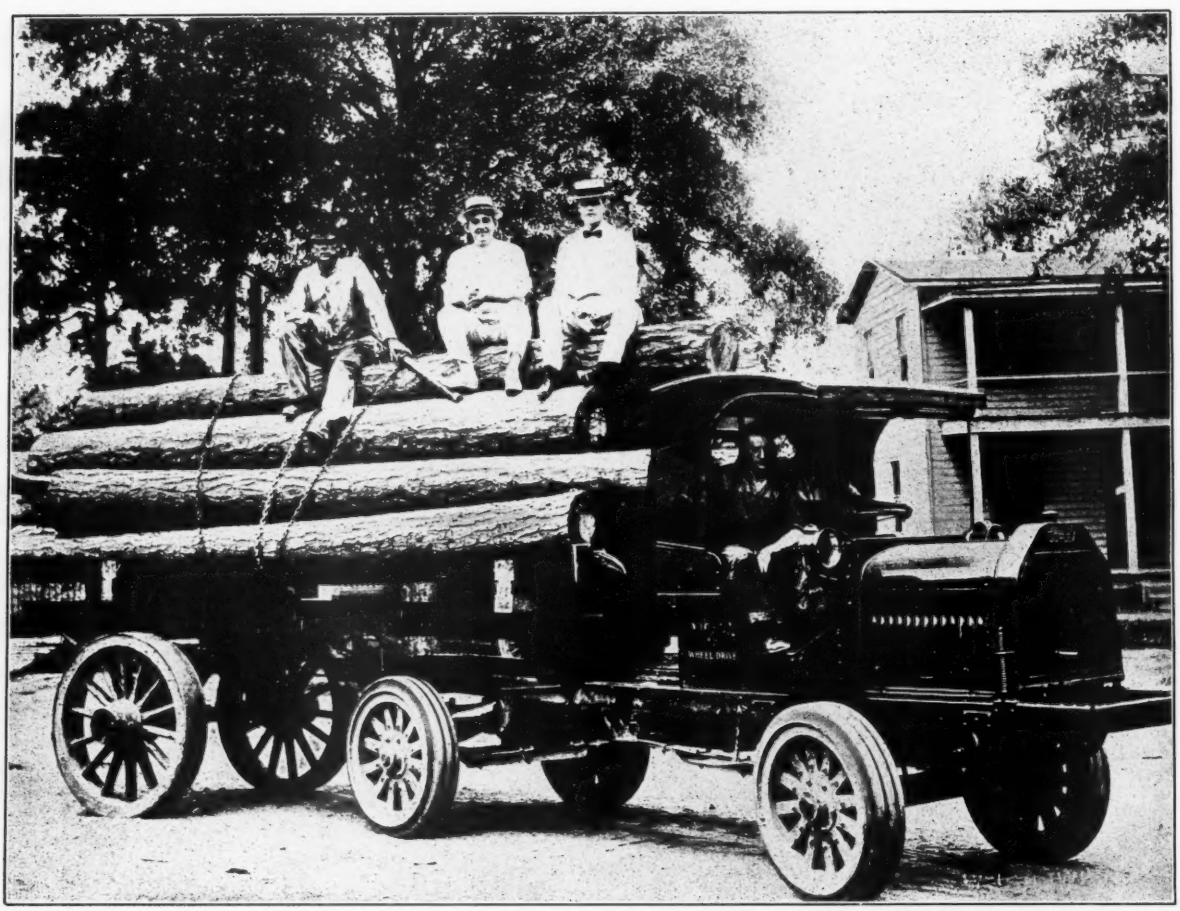
DEFEATING RAILROAD EMBARGOES

This heavy truckload of poles gives more than a hint of the modus operandi of breaking the railroad embargoes which have plagued domestic commerce so much during the past two or three years. If the haul is not too long, the motor truck takes the load and speedily delivers it at its destination. This is being done all over the country with excellent results. The cut shows the Frehauf Semi-Trailer tractor.

of the country is a conspicuous one. A special make of wagon has been provided for the baker, butcher, grocer, huckster, ice cream vender, fishmonger, flower seller, and a list of others almost interminable. Most of these are specialized in bodies rather than in gear. Each has its boxes, shelving, and compartments built to meet the user's peculiar needs. Much pine, fir, cedar, spruce, hemlock, cypress, and redwood are worked into such tops and bodies. Accompanying these softwoods, and used in the same way, are cottonwood, basswood, gum, poplar, elm, sycamore, hackberry, beech, buckeye, and other hardwoods. Much ash and some hickory are employed for bows and other parts of the tops of such business wagons and over all the tent or cover is stretched as a protection against snow and rain.

The horse-drawn stage coach, famous in the days of Charles Dickens' American tour, and later in the western experiences of Mark Twain, has nearly gone out of use; but not so with the city omnibus and the taxi. These vehicles are in the thick of business and they are largely of wood. They are passenger carriers, as the old stage-coach and thoroughbraces were, and forests supply the material now as they supplied it before railroads captured the long-distance travel.

No one man invented the vehicle, but many a man has made improvements on models already existing. Patents by thousands have been placed on record, nearly three thousand patents for springs alone. There are patents on hubs, axles, tops, and on nearly every other piece and parcel of a vehicle. These indicate growth and development, though the first vehicle made by man was so long ago that no record of it exists. Some of the ancients used sleds when they could not make wheels strong enough to carry the loads, and it was dry sledding in the deserts of Africa and in the land of the Hittites. Yet those people knew about sleds and some of the loads hauled on them surpassed the records of the largest sled loads of logs in Michigan and Wisconsin. The ancient people had wheels also, and they had many kinds and sizes. Some were nothing more than wooden rollers like modern house movers use, and they worked in the same way. They had wheels on axles, some of them heavy for oxen, others light for horses. They made built-up wheels such as we make now. A rock carving in Syria shows a chariot

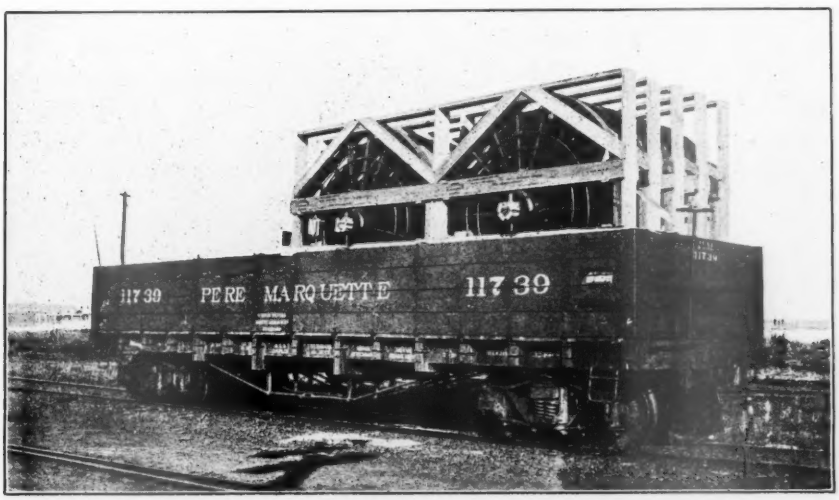


POSSIBILITIES OF THE MOTOR TRUCK

Remarkable strength and excellent speed characterize motor trucks like that in the above illustration (Duplex, Lansing, Michigan). The wooden wheels are feats of engineering, no less than the powerful motor and the rigid frame. The maximum load that may be carried is measured by bulk rather than by pounds.

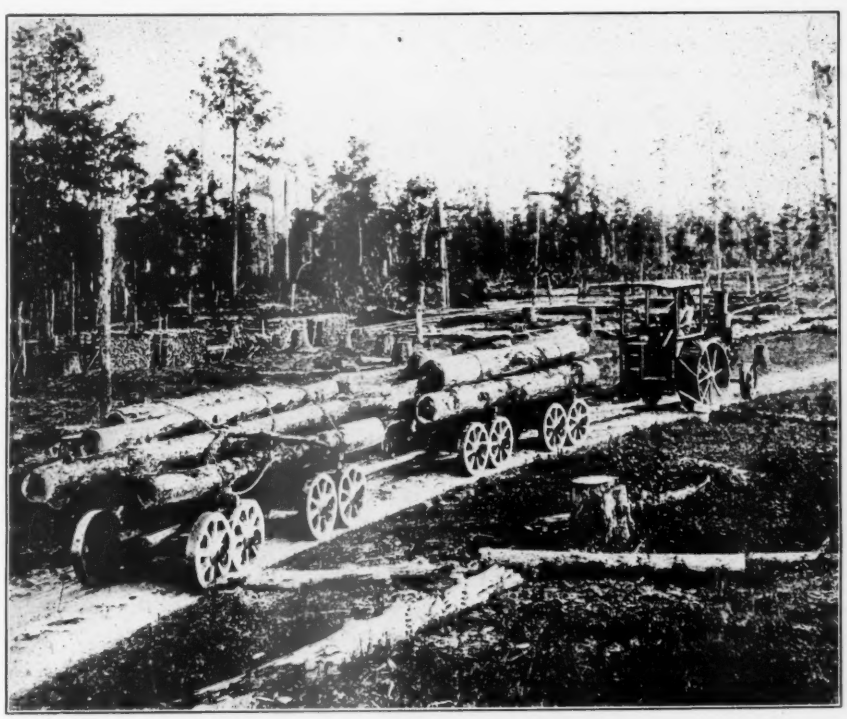
with wheels which would almost pass for automobile wheels of today, except the tires. The chariot dates from before the time of Sanballat, or 1000 years before the Christian era. The light wheels on some of the chariots of the ancients, of which some knowledge exists at the present time, were made of birch, sycamore, locust, fig, and other woods which now would not be regarded as wholly satisfactory for wheels. Some of them had little or no metal, and were not very different from the light wooden Red River carts of Manitoba and Saskatchewan, or like the heavier, clumsier all-wood carts used by the New Mexicans a hundred years ago. It is not necessary to go farther into the history of vehicles made in ancient times. The point is that there has been a long series of developments in the plans and the making of vehicles, and we are simply using what was in part used ages ago, and are adding to make them better. It is a notable fact that the American Indians knew nothing of wheel conveyances. It is not known that they ever made or used a wheel of any kind, unless their discoidal stones be regarded as such, and they were only playthings. But they had a rude sled consisting of two poles on which they placed the article to be moved, and thus dragged it along the ground.

American vehicles are now better than they ever were in the past and better than vehicles are now in the countries across the sea. That is in part due to skill in manufacturing and due in part to the excellent woods supplied by our forests. No other country ever had anything to compare with our hickory and Osage orange in their peculiar qualities; but we have had other woods and plenty of them, and the wagon and carriage makers never lacked material. According to Burnaby, there were 9,000 wagons in Pennsylvania in 1759, and according to Filson who spoke from personal knowledge, the wagons were worth fifty dollars each, when sold at Philadelphia. The nine thousand wagons represented an investment of $450,000 in wagons in Pennsylvania alone at that early date. The figures stand for what was left after Pennsylvania in the year 1755 had furnished wagons worth $100,000 for the ill-fated Fort Duquesne expedition under Braddock, from which scarcely a wagon returned. The Carnegie Museum in Pittsburgh has the tire from one of those wagons, found in recent years near the battlefield where Braddock's army was defeated by the Indians. The old tire sug-




ON THE ROAD TO FRANCE

This shipment of Overpack's Michigan logging wheels was bound for France to assist the American forces in getting out war material from French forests. The wheels are ten feet in diameter and are well known to logging contractors not only in America but in distant countries. They are manufactured at Manistee, Michigan. The spokes are of cork elm and are said to be the longest in the world for wagons.



A TRACTOR DOING STRENUOUS WORK

It begins to look as if tap line railroads may soon be dispensed with in logging operations, if tractors continue to expand their spheres of usefulness. The accompanying illustration represents an Avery tractor (Peoria, Illinois), hauling logs on Powell Brother's operation near Elton, Iowa. Ox and horse teams are back numbers there.

gests a story in wagon improvement since then. It was made in sections, each section being fastened to the felloes with iron bolts, the heads of the bolts protruding through the tire, like cogs on a wheel, but spaced farther apart. In wagons of that kind the felloes were made thick and strong and they supported the tire; but the modern tire supports the felloe. The change in construction shows a great improvement in wagon wheel building in one hundred and fifty years.

The most famous wagon ever made in the United States or in the world was the Conestoga. It had its name from the name of the town in Pennsylvania where the earliest were manufactured about the time of the Revolution. The name appears to have been applied later to wagons of the same type made elsewhere, notably those manufactured at Newton, Virginia. During the westward movement, when families trekked to new homes beyond the Mississippi, wagons of that kind carried them, and were known as "prairie schooners," and still further west they were sometimes designated as "ships of the desert," though that name was a borrowed term rightly belonging to the camel in eastern lands.

The Conestoga wagon was a really important agent in American history and romance. Its front wheels were small, rear wheels high; the hubs were enormous; the body was high in front and behind and projected far over the running gear fore and aft; a white cover was stretched over the bows, providing a waterproof roof, lynch pins held the wheels on; brakes, commonly then called "rubbers," checked the wagon's speed descending steep hills; and the inevitable tar bucket swung from the rear axle. The tar was the lubricant for the "thimble-skeins"—the metal-covered wooden spindles on which the wheels turned. It was pine tar and it had an odor which has been described as "enduring from everlasting unto everlasting." The highways along which those old Conestogas traveled smelled perpetually of the pine tar dripping from the hubs of passing vehicles.

The Conestogas were the freight carriers overland before the days of railroads, and convoys of them made ambitious journeys. A famous route led from Philadelphia and Baltimore to Nashville, Tennessee; but that was not the longest route. One led from the Mississippi River through New Mexico to Chihuahua in Mexico. Over that long route the wagons carried merchandise, and those who drove the wagon trains across the Indian country always went prepared to fight the redskins. It was the same with the long emigrant trains which journeyed to the Pacific Coast from the Mississippi or the Missouri Rivers. Writings relating to the frontiers of that time are filled with references to the Conestoga wagons. Among those who recorded the perils and romances of the overland pilgramages were John James Audubon; Francis Parkman; James, Prince of Weid, and Zebulon Pike, names famous in frontier history and travel.

Of the horse-drawn vehicles those used for pleasure were the first to yield to the automobile. Between 1906 and 1916 the manufacture of horse vehicles, other than farm wagons, declined sixty per cent. The automobile's inroad upon farm wagons has not been so great, but it has been considerable. The total number of vehicles of all kinds has probably not decreased, and it cannot be positively stated that the quantity of wood required in their manufacture has declined. Automobiles require considerable amounts of wood in their construction, but they also use much metal. Some of the best automobiles are built with wooden frames, and practically all motor vehicles are trimmed with high class woods.

## FREE TREES FOR PLANTING IN PENNSYLVANIA

A LARGE supply of extra fine forest tree seedlings will be available for free distribution this spring, has been stated by Commissioner of Forestry, Robert S. Conklin. This is a real opportunity. Anyone who wants to plant forest trees this spring may have them for the asking. There are no strings to the offer, the only condition being that applicants plant not fewer than 500 trees, pay for the packing and transportation, and actually set out the trees in Pennsylvania for reforestation. The trees may not be sold and no orders for ornamental stock will be filled.

The stock available for free distribution is almost all three years old and includes white pine, red pine, Norway spruce, European larch, Arbor Vitae, and a limited quantity of Japanese larch and white ash.

Last year over two million trees were planted by private owners of forest land in Pennsylvania. Applications for almost one million trees have already been received for the spring planting of 1919. Hence orders should be sent early for the supply of certain trees will surely be exhausted, and the number available in subsequent years will be considerably reduced on account of the difficulties experienced during the past few years in purchasing forest tree seed. Application for these trees should be made to the Commissioner of Forestry, Harrisburgh, Pennsylvania.

## BEWARE THE ASH-WOOD BORER!

WOOD boring insects were responsible for the loss to a Mississippi lumber company of more than a million feet of ash logs, according to reports of investigators of the Bureau of Entomology recently. It was during the manufacturing operations to meet the war time demand for ash oars, ash handles and other supplies.

The company had failed to provide for prompt utilization of the logs after the trees were cut, and the destructive ash-wood borers got busy in regiments and divisions.

The bureau lately has been devoting its energies to advising lumbermen and others interested in successful methods of combating the pest, in the hope of preventing a spread to other sections of the country.

# WALKS IN THE WOODS

## (I) THE NEPPERHAN VALLEY IN WINTER TIME

BY J. OTIS SWIFT, AUTHOR OF "WOODLAND MAGIC"

(WITH PHOTOGRAPHS BY THE AUTHOR)

IT IS bright and sunny outside the house here in The Manor. The inch of snow on the ground is melting wherever the sun strikes it. The day grows warmer. The blue of the distant Ramapoo Mountains, clear and bright as torquoise this morning, is growing dim now as the haze rises from the shining Hudson. The grim Palisades turn from purple to gray and brown across the river. It is a winter day full of grandeur. Mile upon mile of rolling country over beyond Tappan and The Reaping Hook suggest big thoughts and sweeping impulses as I gaze from this ridge of hills. But all the morning I have had a more intimate desire in my heart. I have wished to see and study a more humble part of the universe about me. You will laugh, I am sure, but I have been wishing to see, to make sure down to the smallest detail, just what this bitter winter has done to the little frog pond over the hill at the foot of the old woodroad in the Nepperhan Valley.

THE OLD WOOD ROAD DOWN INTO NEPPERHAN VALLEY AND THE FROG POND

Kings have their courts, and emperors their botanical gardens, but not one of them is more wonderful than this little three-acre button-bush circled, flag-waded, lily-dotted home of painted turtles and pollywogs. The greatest landscape gardener in the world, who works day and night, summer and winter, without salary and for pure love, laid out its mystic mazes and hidden grottoes. You know the place in summer! A very tangle of wild frost grapes, wild beans, sumach, Benjamin-bush and sassafras, surrounding a half dried up shallow of green cow-lily padded water, reeds, grasses and marsh marigold and mallow!

To get there we go over through the grounds of the New York Juvenile Asylum and down an old twisting woodroad. Once this woodroad was a colonial lane from Hastings to Tuckahoe, and Washington's troopers passed this way. Before that, legend says, it was the old Algonquin trail where the Iroquois came down from Central New York in the autumn to eat clams and oysters along the Sound in winter. It comes down from Tappan over the Palisades into the Lawrence Estate intersecting the Palisades Interstate Park on the west side of the Hudson. The Dutch settlers made a roadway of it on this side. Christmas ferns, rock ferns, jack-in-the-pulpits, bloodroot, Dutchmen's-breeches, windflowers, fairy-cup moss, sarsaparilla, and a hundred other beautiful little denizens of the wildwood grow among the lichen-covered stones down this old forest wood path. Overhead are white and red oaks; dead chestnut trees, gaunt and skeleton-like in their barkless nudity; great old tulips that are glorious in the spring. Today there is a hush in the wood. Chickadees chirp vaguely. White breasted nuthatches run head downward over the bark of the black birches, saying softly, "Crank! Crank!" But it is not the hush of death. Only the chestnuts are dead—and even they are not dead, for they struggle up in shoots every spring, about the roots. Will the parasite disappear before they are quite gone? Far and wide through the forest we are almost conscious of the breathing of the trees in their winter sleep. It is the rest time, preparatory to spring's reincarnations.

The tall, dry stalks of the lobelias rustle disconsolately, their old clothes in the wind—like ghosts shaking their shrouds about them. But, oh my friend, kneel down here in the dead leaves by this clump of black haw and I'll show you the ever-new miracle of reincarnation. Carefully we dig away the snowy leaves and decayed vegetable mould about the roots of the lobelia, and discover a nursery with two or three babies sleeping healthily. Each

baby is an off-shoot from the mother stalk of the lobelia, waiting patiently for next spring's hush-a-bye baby songs through the undergrowth. The under world of the loam, just below the dried leaf coverlet, is verily whispering with life and energy. The ground is not frozen here in this warm corner. Our fingers uncover elongated cucumber-roots, jack-in-the-pulpit corms, tiny, globular, bulb-like roots of many of the early spring flowers; the hard nut-like tuber of the spring-beauty, the fleshy roots of the dog-tooth violet—all very much alive and waiting with

THERE ARE DENSE MASSES OF BUTTON BUSH ON THE FAR SHORE

almost throbbing interest for the first warm rays of the sun-god to call them in the spring.

No, there is no death here! Only eternal, everlasting life, incarnated again and again. Mother Nature kneeds over and over this black earth to give form and fibre to the souls of her plant children—for if they have not souls what is the thing that is not matter, in the trillium, the painted emblem of the Trinity? They are reincarnated over and over, these wanderers of the wild places. This tangled, sprawling root of wild ginger, *Asarum canadense,* was black loam a few years ago. It will be black loam a few years hence. But in its crawling, snake-like roots is a spark of life as old, almost, as anything in the world. It has come down the centuries, undying, this particular thread, but constantly reincarnated. It is as old as you or I. But let us get on to the frogpond! We clamber down over gnarled root and mossy logs.

There is ice on the pond. The thin sheet of snow is tracked with the feet of rabbits, squirrels, meadow mice, mole shrews, and crows going to the air holes—and something, perhaps only the wind, has been scattering the seeds of the marsh mallow over the white coverlet. What a glorious sight these marsh mallows were last August, staining great patches of the swamp with pale rose color! They stand dry and sere on little islands knee deep in ice, now. The wind rattles their hard little seeds like pills in a box. Beyond the marsh-mallow are yards and yards of wild rose bushes, their red tips glowing brightly. Our grandmothers used to gather some varieties of them to make into jellies. Along the far shore is a jungle of button-bush, covered now by dry, round balls, but last summer making the bank look a bevy of brides in their veils, the white flowers densely gathered in rounded peduncled heads.

We go gingerly out on the ice, and on a far little island, hidden behind clumps of elderberry where the cedar waxwings, bluebirds and starlings feasted last autumn, come upon a large high-bush blueberry. It should have borne several quarts last year, but no one could have picked them, and only the birds could have known of the banquet—though dozens of boys passed within a few rods on their way to school. Along the shore where in summer painted turtles sun on rotting logs, the dry stalks of arrowleaf, cat-o-nine tails, calamus root, water arum, cardinal flower and countless other free citizens of the bog greet us as we pass. The farmers have been trying

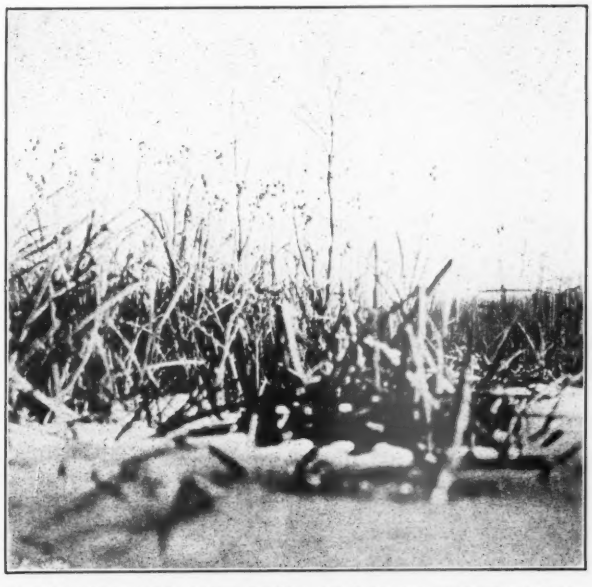
A QUIET SPOT UNDER GIANT OLD OAKS AND TULIPS

to exterminate them for hundreds of years, but these persistent democrats flourish on from year to year, fulfilling their duty of making the waste places beautiful.

There is a sense of mystery revealed in walking about a frozen bog in winter. The catbird's nest that defied you last July while its owner fluttered before you through the watery jungle, mimicking every bird in the swamp and many out of it, is plainly revealed now, a little handful of sticks laid carelessly across the crotched twigs of the cornel bush. It is half full of snow, but there is still the air of a home about it. Close down by the door of old Musquash's reedy house—the muskrats built high

this year in anticipation of floods next spring—an owl has been tearing away the dead grass of a meadow mouse's nest, looking for his supper. Did he get him, we wonder. There are tunnels under the snow, new made. So probably Bubo was disappointed.

There is color enough about the swamp, even in winter time, to delight the eye of an artist. The thin willowy shoots of the cornel, the red-osier dogwood, are turning blood red; the willows are brown and yellow; the sassafras bark is paint-green, the color country folks used to paint their house blinds; the benzoin, or spice bushes, are black with yellow buds ready to break open before the leaves come in the spring; the climbing bittersweet with its scarlet seeds in orange pods; the crimson and rose pink fruit of the burning-bush—did Moses see its cousin in the desert?—drooping on long peduncles; and the drooping cymes of orange and scarlet berries of the woody nightshade, *Solanum dulcamara,* give a glory and a vividness to the tangled masses of vines and shrubbery that advertises the swamp for what it is, one of Dame Nature's own banquet halls for the winter birds which we will not be able to entice to our feeding stations in the gardens until they have exhausted the bounteous feast here. As we go homeward, the cobwebs of the week's work cleared from our brains, we wonder again that any inventor of theological system should have guessed that this beautiful world was made solely for mankind: witness that while we in America may be skimping our food to humanely send it to starving Europe, this nice old lady, Mother Nature, whose realm we have been exploring this winter day, has laid a banquet in every swamp and bog and woodland tangle clear across America, that her wild, joyous little animated airplanes and concert givers may have plenty to eat through the long sleep-time of plants and insects. And were it not for her birds and her insects, notably the bees, we'd have no crops to send to starving Europe. So we conclude the dear old lady must love us, too.



CAT-O-NINE TAILS WITH DRIED STALKS OF MARSH-MALLOW BEHIND, THEIR SEED PONDS RATTLING IN THE WIND

## A NATIONAL PARK TO HONOR ROOSEVELT

THE suggestion made by Charles Lathrop Pack, President of the American Forestry Association, that a great national highway be named in honor of Theodore Roosevelt, has met with popular approval from coast to coast as evidenced by cordial expressions and endorsements in the press. This is closely followed by a sentiment in favor of naming one of the National Parks in honor of Mr. Roosevelt also and Senator Phelan, of California, makes this definite by the introduction of a bill to create a national park on the western slope of the Sierra mountains "to be dedicated as a national memorial to Theodore Roosevelt."

This is a departure from the principle hitherto maintained in the matter of naming national parks, but sentiment favoring it is strong. Robert Sterling Yard, chief of the educational division of the national park service, is an earnest advocate of the proposal. He says:

"Senator Phelan's selection of a national memorial to Roosevelt is remarkably appropriate in many ways. California's memorial to John Muir, her own naturalist, author and prophet of the out-of-doors, was a trail over the crest of the Sierra from Yosemite valley to the summit of Mount Whitney, the loftiest peak in the United States.

"The nation's memorial to Roosevelt may well be the 1,600 square miles which inclose America's greatest grouping of stupendous rugged mountains, her most exuberant valleys, her most luxuriant forests, and a million trunks of the giant sequoia tree, including the General Sherman tree, biggest, oldest and lustiest living thing in the world.

"This proposed national park, which slopes westward from the crest of the Sierras eighty miles or so south of Yosemite, is regarded by the Department of the Interior as the greatest in some respects that America can produce. No name has yet been chosen for this park; it was difficult to find one which carried the idea of its superlative ruggedness and vigor. The name of Roosevelt seems to epitonize and express these characteristics."

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EMMETT D. GALLION, law partner with the late Senator Daniel, of Virginia, and for many years connected with the Interior Department, left a will bequeathing his entire estate, consisting of 750 acres of valuable timber land at Green Bay, Virginia, to the State forest service of Virginia.

All of testator's property, real and personal, is given to the State of Virginia for the benefit of its State forest reserve, his possessions to be used as a forestry reservation under the management of the State Forestry commission.

# Forestry for Boys and Girls

by E C Cheyney

## THE PINE WOODS FOLK

### SQUEAKY CHIPMUNK COLLECTS SOME SEED

NOW that Squeaky Chipmunk had learned the proper time to collect pine seed for his winter stoves, the next thing was to get the seed. He was sitting out on the old pine log which formed the roof of his cozy little home and he was talking over the problem with Mrs. Squeaky who was squatting comfortably in the doorway.

"I ought not to have stolen that cone from Chatter Box the other day," said Squeaky sadly. "If it were not for that, I think he would cut me down some cones when he cuts his own."

"Maybe he will not find all that he cuts down," said Mrs. Squeaky consolingly.

"He may overlook a few," said Squeaky, "but very few unless he cuts a great many at a time. Then he sometimes loses track of them."

"Oh, well," said Mrs. Squeaky trying to comfort him, "he surely will not cut them all, and when the cones open on the trees and the seeds fall out we can gather them up."

"Yes," said Squeaky, "we can always get them that way, but it is very slow work and very tiresome. Here comes Chatter Box now."

They both sat very still and watched Chatter Box, the red squirrel, come bouncing through the woods towards the big Norways. He ran straight to the tallest one, ran up it a few feet, and stopped to look around. He immediately saw the two Squeakys watching him.

"So there you are, you little thief," he called to Squeaky, "waiting for a chance to steal some more of my cones are you?"

"No," Squeaky assured him, "I am not going to steal any more. I would not have stolen that one the other day only I got so hungry watching you eat that I simply could not stand it any longer. I was wondering whether I could not get you to cut me down a few while you were up there."

Chatter Box climbed up a little farther and took a seat on the stub of a limb.

"I like your nerve," he said from his new position. "Steal from a fellow one minute and ask him to help you the next." He looked at Squeaky sharply with his bright little eyes and paused. The next thing he said made Squeaky fairly jump for joy and then feel very much ashamed, indeed. "But," he continued, "I suppose I might as well cut you down a few just to be neighborly, for to tell you the truth I did not intend to eat that cone you stole the other day anyway. I had had enough and was going to give it to you."

With that he scampered on up to the top of the tree and began cutting off cones at a great rate. They fell so fast that it seemed to be almost raining cones.

"Help yourselves," called Chatter Box, "there are plenty of them."

They did not wait for a second invitation. They scuttled off into the brush and were soon carrying in cones as fast as they could run.

Pretty soon Chatter Box came sliding down the tree to pick up some for himself.

"Thank you ever so much, Mr. Chatter Box," said Mrs. Squeaky politely. "It would have taken so many days to pick up this much seed loose on the ground."

"That's all right," said Chatter Box. "I always lose a great many anyway. All of us do. We are forgetful and we forget where we have hidden them. Do you see those three big trees over there so very close together? My great-great grandfather planted those. He buried a cone there and forgot it. Those three are the only ones left."

"Isn't that wonderful," said Mrs. Squeaky. "You must feel very proud of him now. I have often wondered where those bunches of little trees came from."

"That's the way it happens," said Chatter Box pleasantly, "they have come from forgotten squirrel caches. So you might just as well have the ones I would lose and I'll be more careful with the rest."

He scampered off to collect some cones for himself and left Mrs. Squeaky to explain the mystery of the little groups of pine trees to her husband.

### THE BALSAM AND THE BIRCH

Said the little balsam seedling to the big white birch
You tower up above me like the spire of a church,
But the day is fast approaching and it's not far away
When I'll be growing faster than you dream of today.
I shall still be growing upward when you have reached your height
And then I'll drop my leaves on *you* with all my might!

## THE CONIFERS WHICH ARE NOT EVERGREENS

(ANSWER TO BOY SCOUT QUESTION NO. 1)

THERE are in the United States just two genera of coniferous trees which drop all of their leaves, or needles, in the winter like the broadleaved trees. All the other conifers, or cone-bearing trees, drop some of their needles every year, but always retain enough of them to be called evergreens.

One of these genera is the larch, of which there are three native species, one in the lowlands of the Rocky Mountains and the West Coast, one near the timber line on the very high mountains of the west, and one, the tamarack, in the swamps of the Northeast and around the Great Lakes. The needles on these trees turn a quite brilliant yellow in the fall, about the time that the hardwood leaves are turning, and later fall off, leaving the tree bare through the winter. The fresh, green needles of spring, arranged in rosettes on little bumps along the twigs, make them very pretty.

The other genus, of which there is only a single species, is the bald cypress. It is one of the largest trees in the Eastern United States, and is found only in the swamps of the southern states. Like the larch, it sheds its needles and many of its smaller twigs in the fall and remains bald through the winter.

It has another and very interesting peculiarity. Since its roots are almost continuously under water and therefore very much in need of air they send up peculiar growths, resembling irregular cones, to the surface of the water. These are known as "cypress knees" and there are often dozens of them rising from the roots of a single tree. Where the water is deep the roots are tall, where the water is shallow, they are short. If you wade around a cypress tree, you will certainly discover some of the knees that are below the surface of the water, even if you do not see any above it.

## SNOW IN THE WOODS

(ANSWER TO BOY SCOUT QUESTION NO. 2)

THERE will probably be a great difference of opinion as to the relative amount of snow in the woods and in the open, depending upon the time of year that the observations were taken. Owing to the tree canopy, the radiation from the earth and the shade, the temperature changes more slowly in the woods, and it is never quite as hot or quite as cold as in the open. If there is no sunshine, the first snow in the fall will probably disappear more rapidly in the woods than outside, but with sunshiny days and the cooling off of the ground the shade in the forest begins to tell. Later snows last longer in the woods and accumulate there so that toward the end of the winter the snow lies much deeper in the woods and lingers there for many days after it has disappeared in the open fields.

## PROBLEMS FOR NEXT MONTH

(1) Does the tamarack or cypress or cedar grow faster in the swamp or on high ground?

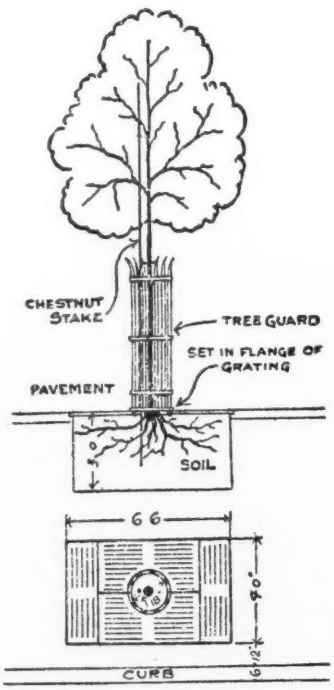
(2) An ash and a sugar maple are growing close together, which one keeps its shape the better?

## GRATING SOLVES CITY TREE PROBLEM

TO INDUCE trees to grow and flourish in city streets and small parks has always been a hard problem for foresters and city beautifiers. Even now, though great progress has been made, none is hopeful of producing large trees or prolonging their lives more than a comparatively few years. The chief obstacles to tree growth in city streets are lack of root room, scarcity of moisture, and the quick depletion of soil fertility which cannot be renewed through asphalt and cement. Even where a large opening about the tree trunk is left in the paving material, the tramping of myriads of feet soon renders it almost as solid as the stone sidewalk.

Paris was one of the first cities to seek and find means for prolonging shade tree life. The initial move was to cover the open space about the tree trunk with an iron grating that sustained the foot traffic and prevented packing. This idea was taken up and extended by other cities till now New York has a system in vogue a little in advance of all others. This city had to contend with not only the tree troubles of other cities, but there is hardly a spot in Manhattan where the natural rock is not within a few feet of the surface.

The accompanying illustration gives a detailed sketch of a tree-planting specification under which the Manhattan Park Department contracts for the work. First, an excavation 4 by 6 feet and 3 feet deep is made where the tree is to stand. This is filled in with good quality soil to within six inches of the top and the tree roots well tamped. An iron grating in two parts the full size of the excavation, with an 18-inch circular opening for the tree trunk, is then set in, resting upon the sidewalk material. This large area of grating lets out gas, steam, and other harmful substances that are constantly escaping from under ground pipes and which are harmful to tree roots. It also allows a considerable amount of rain water to reach the roots and permits aeration of the surface soil under the grating. Mr. J. S. Koplan, the park forester, has devised a flat steel cultivating tool with which the soil under the grating may be stirred and loosened two or three times a year, which also prepares it for the reception of liquid fertilizer poured through the grating.




**A Way to Keep City Trees Alive, Showing the Grating to Save the Roots from the Pressure of Countless Feet.**

Mr. J. P. Morgan was one of the first New Yorkers to try the new device. Trees planted in front of his residence in Madison Avenue several years ago are doing nicely, where trees set under the old plan had invariably failed. In Kenmare Park, at Kenmare and Lafayette streets, the Park Department has a plantation of fine trees, each with an 8 by 8 foot grating, the larger area being used because of the poor natural soil conditions. One of the newest and most attractive plantations of street shade trees has recently been completed by the American Geographical Society around its building at 156th street and Broadway. In this instance, semi-circular wrought iron grills, with a 6-foot diameter at the curb line, have been used. The trees are 8-inch Oriental planes, 30 feet high, selected by the City Park Department from among hundreds in the nursery. There are eleven of the trees, and the fact that Oriental planes were selected proves that that park forester does not expect another such severe season as last winter, when nearly all the plane trees in the city were killed by the cold.—New York *Times*.

# TRENTON'S BIRD-HOUSE BUILDING CONTEST

BY M. M. BURRIS

CITY FORESTER, TRENTON, N. J.

BELIEVING in preventive medicine, and knowing that our native insectiverous birds are a strong factor in the suppression of insects attacking our trees I urged a campaign for the starting of the bird-house building contest.

Park Commissioner Burk was very interested in this campaign and was willing to offer prizes for the best bird-houses. We enlisted the services of Mr. W. R. Ward, director of Manual Training of Public Schools, and our plans for a lively campaign were soon formulated.

It was decided to open the contest to the boys of the fifth, sixth and seventh grades. The following announcement was sent out to the schools:

1. Every bird-house must be suitable for one or another of the following birds: Bluebird, robin, chickadee, white breasted nuthatch, house wren, martin, song sparrow, phœbe, red-headed woodpecker and sparrow hawk.

2. Only boys in the fifth, sixth and seventh grades in school may enter the contest.

3. All bird-houses must be well constructed and properly painted or otherwise covered to protect them from the weather.

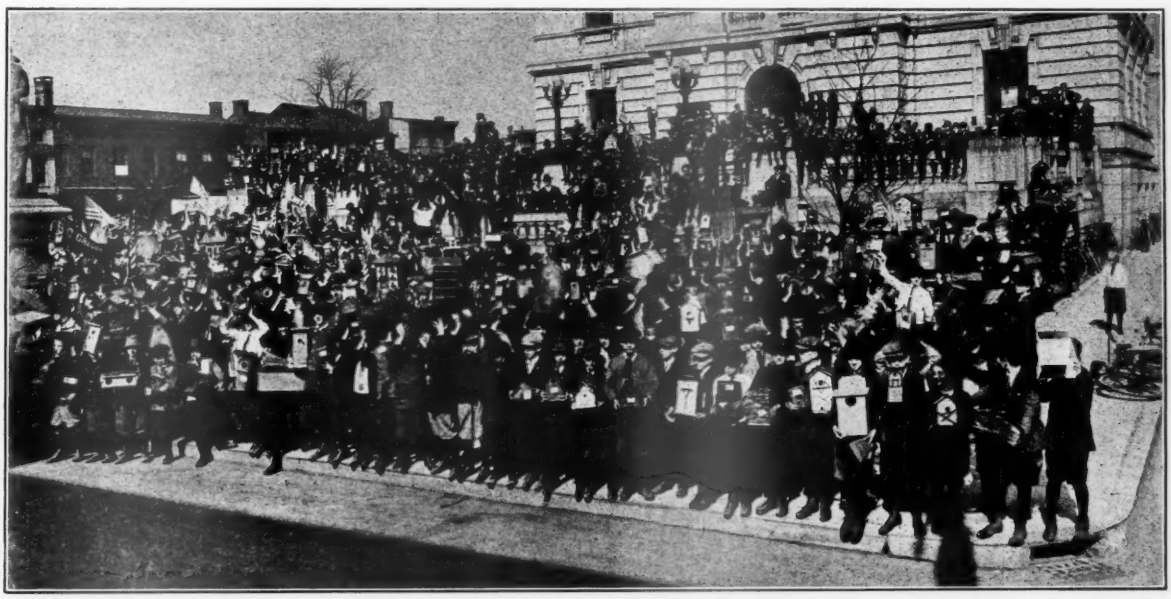
4. The contest closes April 1, 1918.

5. All bird-houses are to be given to the City of Trenton to be placed in the various parks.

The boys were told that by entering the contest they would have lots of fun, learn something about birds, help to attract the birds to our city, and might win a prize. Very little emphasis, however, was laid on the prizes. We were successful in instilling civic patriotism into the hearts of about a thousand anxious boys who were soon ready to start with their saws and hammers.

But before they started, they were told that these bird-houses were to be built from scrap or waste lumber, boxes, branches, logs, or anything which could be used.

The boys responded good and strong. About a thousand boys started in the contest. Soap boxes, tin cans, scrap lumber, buckets, funnels, flower pots, logs, bark and every other conceivable material which could be worked into a bird-house were brought into the manual training rooms. The boys were busily engaged studying plans of bird-houses which we had prepared for them, and they soon flocked to the Public Library in search of information regarding birds and bird-houses. They were told to be original and not to copy each other's designs. They were given the necessary data for the design of the house for whatever bird they were going to construct it, but the details were left for them to decide upon.



PROUD TO POSE FOR THEIR PICTURES

This picture shows some of the boys who took part in the contest and the bird houses they built, standing in front of the Municipal Building.

The boys were soon busily engaged with their tools—all of them interested, heart and soul in this project. And when the contest closed about twelve hundred bird-houses were completed. A display of unexpected skill in design and construction. Indeed, they were truly the work of craftsmen.

They were proud of their work and they were granted the privilege of a parade. How proud they were as they marched to the City Hall, each boy carrying his own bird-house. Some of the bird-houses were so large that

little carriages were employed to cart them in the parade.

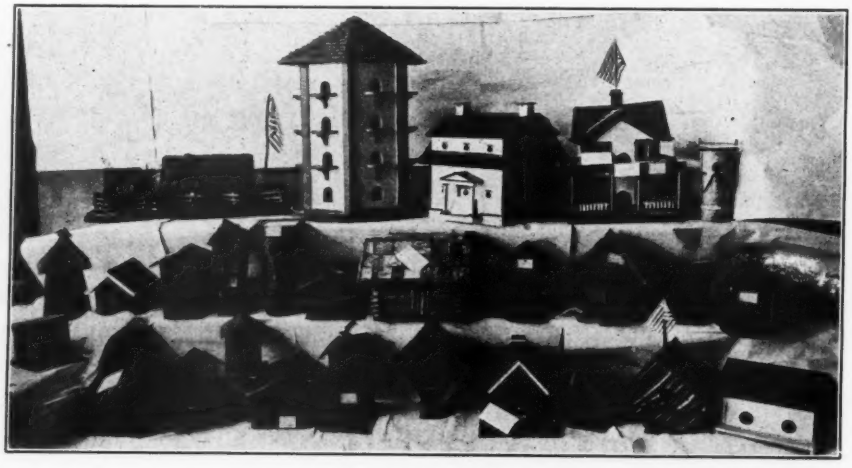
The boys were lined up in front of the City Hall, and Commissioner W. F. Burk, in the name of the city, thanked them for their act of civic patriotism. The boys were glad in having done their bit, a photograph was taken of them with their bird-houses and is here reproduced. The boys then brought their bird-houses to an exhibition hall in the heart of the city where the bird-houses were displayed.

A PRIZE MARTIN HOUSE

Best of all, it was built by a deaf and mute boy of the sixth grade.

Three prominent citizens were selected to act as judges. It was originally planned to give only twenty prizes, but it was so difficult to pick the winners, that the judges decided to give additional special prizes. Crowds thronged to the exhibition hall and the bird-house display was the talk of the city.

The bird-houses were carted over to the parks where a portion of them were placed on the trees. Not only are they of beneficial value but they helped beautify the parks. Commissioner Burk distributed them also to the various state institutions and to residents of the city who had suitable places for them. The Boy Scouts put up more than a hundred bird-houses on Park Island which they use as their camping grounds in the summer. The demand for them was so great that some were even sent to Long Branch. Yes, we were very proud of the results. The boys learned a good deal about birds and became ardent admirers of them. This enterprise brought to the city twelve hundred bird-houses, at no expense. Trenton has responded to the cause of our feathery friends and promises to be their protector.



THE PRIZE WINNERS

These attractive bird houses were the ones that carried off the trophies.

Without the co-operation of Commissioner Burk and Director Ward, the campaign would not have been such a success. Commissioner Burk's mere presence in the school was an inspiration to the boys. He appealed strongly to the boys and they responded. Director Ward had a very efficient staff of teachers in his manual training department and his services were indispensable to the cause.

As a fond lover of birds, and appreciative of their power of insect control, I was greatly satisfied with the results of this campaign.

## A Bird Fountain For Roosevelt

The National Association of Audubon Societies and its affiliated State Organizations, Bird Societies and Sportsmen's Clubs throughout the country, will at once begin the work of providing for the erection of a notable work of art, to be known as the Roosevelt Memorial Bird Fountain. The plan was originated by T. Gilbert Pearson, the Secretary of the Association, and is being enthusiastically received by bird-lovers all over the country, for Colonel Roosevelt was one of the most forceful champions of wild life conservation the world has ever produced.

It is understood that the most eminent sculptors in America will present plans for the memorial bird fountain. Its location will be probably in New York or Washington City. A National Committee of Nature-Lovers and Sportsmen will advance the project and Mr. Charles L. Pack, President of the American Forestry Association, has accepted a place on this committee. Contributions for the fountain fund may be sent to Dr. Jonathan Dwight, Treasurer, 1974 Broadway, New York City.

# FORESTRY IN DIXIE

IF HORACE GREELEY had been a forester and had lived in 1919, his famous advice to the young American would have been "Go South, young man, go South!" and to the young Southerner, "Stay South, young man, Stay South!" For if ever there was a field and an opportunity for the ambitious forester, it is in the old South, from Virginia and Missouri to Florida and Texas. Not only is there a field for the forester, but more important yet, there is a wonderfully wide field for forestry. While the East, under compulsion of a real dearth of local timber supplies, has for fifteen years been practicing at least the rudiments of forestry; and while the West, under government ownership of immense bodies of timbered land, and under the scourge of timber-destroying fires, has for as long, or longer, studied the problems of forest conservation and applied their solutions, the Southeast has, with a few notable exceptions, not yet awakened to the need for forestry. But the South will not long remain blind to this great movement, and can already point with pride to 1,837,000 acres of National Forests, in Virginia, North Carolina South Carolina, Georgia, Alabama, Florida, Tennessee and Arkansas; to state forestry departments and forestry associations in Virginia, West Virginia, North Carolina, Tennessee, Louisiana and Texas; and to instruction in forestry in the state colleges of North Carolina, Georgia, Tennessee, Missouri, Louisiana and Texas. But with no state forestry department in eight Southern States, South Carolina, Georgia, Florida, Alabama, Mississippi, Arkansas, Missouri and Oklahoma, and a total forestry appropriation in the six named states now having departments of but $42,900 in 1918, there is presented to the thoughtful Southerner a pressing need for increased effort and a determined campaign for forestry legislation, study and action.

SOME OF THE FORESTERS WHO ATTENDED THE BIG MEETING AT JACKSONVILLE

Never can there be a more propitious time for pushing forestry in the South. In recent years a great awakening has taken place to the vast acreages of waste and idle land—cut-over and swamp-land—that lie within the boundaries of the Southern States. Beginning with the Cut-over Land Conference of the South, held in New Orleans in April, 1917, a powerful movement has gained headway, constantly looking to the development of the South's greatest single asset, her warm and fertile soils. It is but natural that in this development the greatest prominence has been given to those uses of the soil, farming and grazing, that promise an immediate cash return. There has been a natural tendency, in the first flush of their enthusiasm over their newly discovered asset, for Southern land owners to class all their cut-over lands together as valuable farming soils, and in the absence of anyone to tell them differently to look upon the possibilities of tree growing as too unremunerative to be worth consideration. Now is the time for the forester to come forward and show the owner of young second-growth timber the value of his property, to point out to him how fast it is growing, how valuable it will shortly be, how simple a thing it is in the South to renew our fast-disappearing forests. Now is the time, before the land speculator can get in his deadly work on a large scale, for the forester to present and push his program of land classification and thereby effectively prevent the repetition of that great economic and social tragedy which elsewhere has followed attempted agricultural development of land that never should have been farmed. Now is the time for the forester to link together in the public mind fire protection for improvement of the range and enrichment of the soil, and fire protection for the encouragement of second growth.

The conference of Southern foresters held at Jacksonville, Florida, on January 3rd and 4th, with a field trip on January 5th, brought out all of the above mentioned points. That meeting, engineered in part by the Louisiana Department of Conservation (as was last year's meeting at New Orleans, the first meeting ever held in the far South of professional foresters), and in part by Sydney L. Moore of the Sizer Timber Company, of Jacksonville, and Austin Cary, of the United States Forest Service, was remarkable by reason of three things: First, the attendance of the state foresters of

six Southern States, as well as members of the United States Forest Service, professors of forestry and other foresters working in nine different states; second, the presence and active participation of the Secretary-Manager and Assistant Secretary of the Southern Pine Association, the Secretary of the Georgia-Florida Sawmill Association, and the Secretary of the Turpentine and Rosin Producer's Association; third, the active interest and wide connections of the Florida delegates, who included the manager of the Florida Tick Eradication Committee, the chairman of the Conservation Committee of the Florida Federation of Women's Clubs, and several state officials and members of the Florida legislature. We venture to say that the meeting received wider publicity from the trade journals and newspapers of the country—thanks to the initiative of those agencies in having representatives in attendance, than any previous forestry event taking place in the far South. The proceedings of the meeting, which were conducted informally with few prepared papers, will be gotten out in mimeographed form by R. D. Forbes, Secretary of the Conference, Department of Conservation, New Orleans, Louisiana.

The topics under discussion included "Forest Investigations," "Railroad Fire Protection," and "Publicity and Education," on the first or professional day's sessions, presided over by State Forester Holmes of North Carolina, in the absence of Col. Henry S. Graves, Chief Forester of the United States Forest Service, who was ill. On the second, or open, day's sessions, Secretary J. E. Rhodes of the Southern Pine Association presided, and started off the meeting with the remarkable statement that within five years 3,000 southern pine mills would cease operation because their stumpage will be exhausted. "Forestry and the Forest Industries," and "Cut-over land Utilization," occupied the meeting, prior to a discussion by the Florida delegates of a proper forestry code for that state. The meeting came to an end, except for a most enjoyable field trip to Starke, Florida, on the following day, with the passage of appropriate resolutions, embodying most of the ideas presented at the beginning of this article.

# THE FORESTRY SITUATION IN NEW SOUTH WALES

THE special Australasian correspondent of the *Christian Science Monitor* writes from Sydney that the need for a complete and consistent state forest policy in Australia has occasioned much recent legislation on the subject, culminating in the new Forestry Act of 1916, which repealed the old Act of 1909, becoming law on November 1, 1916. The new act embraces the most advanced measure of forestry legislation yet introduced in the Commonwealth of Australia, so that it is now made possible to create and maintain a progressive, consistent and suitable system of forest management.

By the provisions of this act a new policy was framed for the allocation of the duties of the respective commissioners, systematizing the methods of control to be exercised by them. As an outcome of this, it became necessary to construct machinery for the performance of the wide and important functions imposed upon the commissioners, including the training of officers, the demarcation and survey of forests, research work, commercial development, including the conversion and sale of wood; the introduction of system in administrative methods and business management. So far as circumstances and financial limitations have permitted, this scheme is now in operation.

A report upon the period of transition between July and October, 1916, when forestry was dealt with as a branch administration of the Department of Lands, and November, 1916, to June, 1917, when the business was transferred to the control of the Forestry Commission appointed under the Act of 1916, has been issued recently under the supervision of the Chief Commissioner for Forests, Mr. R. Dalrymple Hay.

The initial steps taken during the period covered by the report, toward the inauguration of the new administration in conformity with the Forest Policy may be briefly stated as follows:

1. The preparation of regulations under the new act. These were framed by the commission, and having been approved by the Executive Council, were gazetted to take effect from August 1, 1917. In a general way, these regulations outline the administrative scheme, and, in detail, direct the procedure.

2. The organization and training of a staff to undertake forest survey as a preliminary to the laying down of forest working plans. A number of trained surveyors are still engaged in this work.

3. The selection of a site for the forest training school, the design and erection of suitable buildings, and the selection of a principal for the school.

4. The initiation of research for the investigation of the pulping qualities of woods, for ascertaining their value for manurial potash, and for ascertaining by destructive distillation their value for the production of various by-products.

5. The creation of a commercial department was inaugurated by the purchase of two saw mills, which are now being worked satisfactorily as an industrial undertaking upon strictly business lines. Arrangements have been entered into with various government departments for the supply from these mills of sawn, hewn, and round timber, required for various public works.

6. The partial reorganization of the administrative arrangements, as far as funds allowed, has been affected including the establishment of an accounts branch with necessary staff and the appointment of a leasing officer to administer tenures which have already been, or in future may be, granted in connection with state forests. To provide consistency in the administration generally throughout the forests service, a comprehensive manual

has been compiled and circulated for the instruction and direction of all concerned.

The timber industry, in common with others, has of course been seriously affected by the world war, the consequent disorganization of markets, and the restrictions of oversea shipping. It is therefore in natural sequence to these conditions that forest activities should have declined in volume and value, and forest revenues decreased. In the same connection, the efficiency of the Forest Service has been materially reduced by the enlistment for active service of a large proportion of the trained staff. Despite all obstacles, however, the new scheme of forestry may be said to have been fairly launched, and with every promise for progress; and there is already undoubted evidence that the introduction and operation of the new policy, with its measure of independent control, must prove of value to the State. Systematization and stability which were impossible under the ruling conditions prior to the Forestry Act of 1916, make it probable that when activity in the timber industry is resumed and accelerated, as it must be after the war, the Australian forests will be more fitted to meet the expected enormous demand which will arise from the re-establishment of domestic and industrial conditions.

The business of the Commission now in hand, includes the following undertakings connected with the industrial side of forestry, which do not usually come within the scope of forest practice, viz: (a) Timber inspection; (b) Direct conversion and sale of forest products; (c) Sawmilling and timber supply, and (d) Utilization of prison labor.

A branch for the inspection, grading, and certification of timber by the Government has been in existence for many years, and is recognized as an essential in the timber industry, for the convenience of trade, and the satisfaction of timber purchasers.

In the regenerative treatment of forests, the practice has been adopted of converting any marketable wood in the areas under treatment, and in this way much waste and low-value timber is being utilized with profit. The business of direct conversion and sale of products is one that promises to extend considerably in the practice of state forestry. The business of saw-milling and timber supply is a recent development, rendered possible by the wider scope of the Act of 1916. Its primary aim is the supply of timber for Government purposes.

With regard to the utilization of prison labor, this scheme combines forestry with the work of reform; prison labor being employed on clearing and planting work near Tuncurry on the north coast.

A salient feature of the new forestry policy has been the training and specializing of the staff. Three licensed surveyors and one forest officer were trained in the methods of forest survey and assessment work. A graduate in engineering, of Sydney University, was added to the staff of the commission, to acquire experience in the forest system and to organize and build up the science of engineering as it applies to the opening up and development of the forests. One forest officer was given a short course in the methods of afforestation and nursery practice. Three overseers were appointed for training in the duties of state forest supervision.

The Strickland state forest, which is to be attached to the Forest Training School at Narora, New South Wales, has been organized as a medium for the training of forest students. A commencement has been made in the research work in connection with forest products and by-products. Samples of wood have been submitted to laboratory tests to ascertain their cellulose and pulping qualities and arrangements have been made for destructive distillation of the principal native woods on a commercial scale, in order to ascertain the quantity and value of the by-products obtainable from them. This line of research will have an important bearing upon the problem of the utilization of waste, and upon the future of Australian forestry.

## ENTHUSIASM FOR MEMORIAL TREES

IN ALL parts of the country popular interest is manifested in the American Forestry Association's plan for memorial trees to soldier and sailor dead and in the Association's similar plan for the planting of trees as memorials to Colonel Roosevelt. Reports of constantly increasing enthusiasm reach Washington by every mail. Probably no memorial project growing out of the European war has met with such spontaneous approval.

Especial interest attaches to the activity of the Boy Scouts of America in planning tree memorials to Colonel Roosevelt. A million pine trees will be set out in the Interstate Park by the Scouts of New York City. Several troops of Manhattan Borough Scouts are endeavoring to have a grove of trees planted in Central Park to represent the formation of a troop of scouts in the regulation four patrols and called the Roosevelt Scout Shelter.

Special Roosevelt Scout services will be held in Philadelphia on April 5th, following which each troop will plant a tree. Columbus Scouts will plant Roosevelt Grove on the State House grounds in the center of the city. The Boy Scouts in Everett, Washington, are to plant trees on the highway from Skagit to King Lines in honor of the soldier and sailor dead, and they now ask that trees be included for their chief scout citizen. Chicago is planning for a fitting memorial in the forest preserve and the scouts are eagerly working on the plan. In Syracuse, New York, the scouts will plant a number of "Roosevelt elms" in each of the city parks. Boy Scouts in Rochester have put it up to the park commissioner to designate the kind of trees to be planted and their location in the city parks. A row of Roosevelt trees will be planted in Marion, Indiana, and the Boy Scouts will carry out a public ceremony at the time of planting.

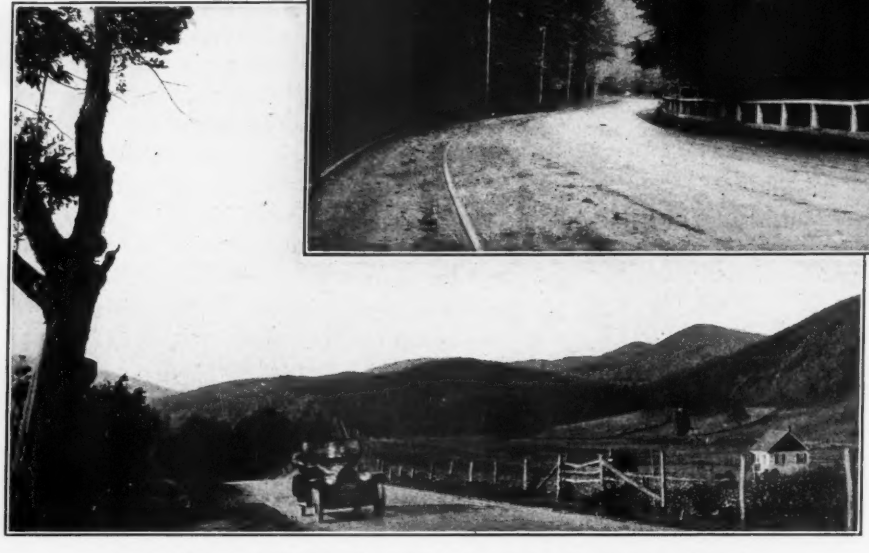
**PLANT MEMORIAL TREES**

# ROADSIDE PLANTING AS A MEMORIAL TO OUR SOLDIERS AND SAILORS

BY PROF. R. B. FAXON

WITH the interest that is being shown over the entire country at the present time regarding the planting of trees along our highways and through many of the cities, towns, and villages to serve as memorials to our soldiers and sailors, it is interesting to note that New York State has definitely under way a plan whereby the unit of the State Highway running from Syracuse to Utica is to be completely developed and the planting so marked with suitable tablets to commemorate the brave deeds of the soldiers and sailors in New York State. This unit of the highway is approximately sixty miles in length and offers exceptional opportunities not only to serve as a most fitting memorial for the State's sons, but also to act as a demonstration planting for other sections of the State interested in this work.

A NATIVE PLANTING ON A BEAUTIFUL CURVE OF ROAD



A SECTION OF COUNTRYSIDE WELL ADAPTED FOR TREE PLANTING

The New York State College of Forestry, under its State-wide Extension Service, has co-operated with the New York State Motor Federation in the construction of this plan and at the present time the preliminary survey of this section of the highway is fully completed. It is planned during the coming year that not only the final planting plan is to be made available, but that active work in planting may be started. A bill recommending the planting along the State highways is soon to be placed before the State Legislature where it is hoped that not only a sufficient appropriation will be made available whereby this initial demonstration planting may be put into immediate effect, but that a further appropriation be made for the carrying out of similar projects throughout various counties of the State. It is felt that no object could express more fully the respect and admiration held for these men than that of tree planting along the State Highway, for in the years that will come, each succeeding year will add to their glory and charm. Co-operation with other State bodies such as the Sons and Daughters of the American Revolution is to be sought and it is hoped that New York State may find a worthy pride in its achievements along this line.

The matter of roadside planting, or as may be termed, the utilization of our roadside areas, has been given considerable momentum during the past five or ten years, and should with this added incentive of serving as a memorial planting be brought to a point within the early future, when we may look for more definite results.

There are many elements which enter into considerable prominence and importance in the matter of roadside planting and these should be given consideration if the greatest amount of benefit is to be secured from such plantings. It must first be recognized that tree planting along our improved highways, if properly done and maintained, will be of considerable practical value aside from that of ornamentation. That such trees can be of great

service in affording an added protection to the pavement by means of their shade, is acknowledged by many authorities when through the long hot summer months the roadway is subject to an intense heat, causing the pavement to dry out, and producing a large amount of dust. Each particle of dust thus blown away shortens the life of the highway to that extent. Trees can, in some instances be of service in keeping the drifting snow off the roadside along the more open stretches of highway through the winter season. In many cases where rows of well established trees have been found growing along the edge of a field, no depreciation in the value of the adjacent land was noticed in its use for crop purposes. In some cases where trees such as the Oriental Plane and American Elm have grown into immense specimens the land adjoining the trees for a distance of a rod or two has possibly been made less valuable for crop production, though the added value which such trees afford the entire field in the way of shelter from strong winds usually outweighs the loss of this small area for crop production. Many unsightly and barren strips composed of gravelly soil are found along certain sections of our highways and on such areas it is usually found that little or no tree shrub growth is present on account of the very sterile condition of the soil. In such cases fertile soil must be brought in if we are to secure worth while results in our plantings. Embankments of varying size are also found along many of our highways and though in some instances a natural growth of native material such as sumac, birch, pine, etc., has completely covered these areas, in many places such embankments have been found in a very barren condition and it will take several years before they will be covered by native growth. In such instances artificial reforestation will be most satisfactory.

*Photograph by Underwood and Underwood*

AN AVENUE OF STATELY EVERGREENS IN BRITISH COLUMBIA

The planting of such trees as memorials to our soldier and sailor dead is advocated by the American Forestry Association. Surely there could be no finer tribute to keep fresh the memory of their heroic deeds. This beautiful spot is on the road to Emerald Lane—a line of evergreens one mile in length with a snow peak at each end, connecting Snow Peak Avenue and Emerald Lane.

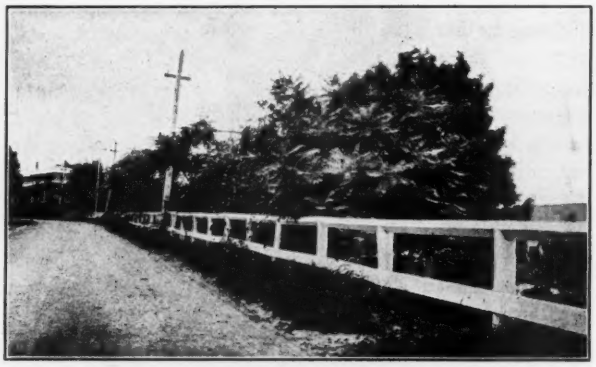
In arrangement of plantations especial care should be exercised in retaining and enhancing all desirable views from the roadside. In many places most charming vistas may be secured by a slight cutting through the underbrush, and in other instances plantings will be needed to break up the longer stretches of views found along the roads and by an opening here and there create desirable views along various parts of the roadside. It is often found desirable to bring ones interest into the

roadway itself, due to objectional features found along the highway or where the country is such as to be most monotonous in its character. In such instances heavy mass plantings of the trees or shrubs can be utilized on either side of the highway cutting the view from the roadside, thus making the element of the picture the roadway itself.

BARE AND UNSIGHTLY WITHOUT TREES

A splendid argument in favor of tree planting along our highways.

An obstacle in our tree planting work which must be given due consideration in that along practically every main highway we are confronted with many overhead wires. That these are necessary is duly recognized and it no doubt will be many years before we can expect any adequate system of underground wiring throughout the countryside. In many places where this problem must be solved, trees such as the dogwood, hawthorne, sumac, and willow may be planted to advantage, as such trees never reach a size which will interfere with the overhead wires. In other instances it has been found possible to so train the large growing species that their crowns may grow above the wires. Where tree planting is found impractical due to these conditions, it is always possible to mass in large clumps of shrub material, preferably of stock indigenous to the surrounding region. That we have such an obstacle before us should however not tend to stop our efforts for more and better tree planting in such places.



AN ATTRACTIVE BIT OF ROAD

Native sumach is used for this planting.

The ultimate width of the improved highway is also a present-day problem, for it is realized that in many places where such improved roadways today are only fifteen to twenty feet in width, eventually with the greater

A SPLENDID EXAMPLE OF ROADSIDE PLANTING

These beautiful trees grow well above the overhead wires, which are sometimes quite hard to dispense with in the country.

use of motor vehicles a demand for a roadway of not less than thirty feet wide will be made. All planting work to be considered should be done so as to allow a pavement of this minimum width on all main highways and where the present roadway is not sufficiently wide to permit of any planting, immediate steps should be taken to secure additional land to be placed under the control of the State Highway Commission.

In many ways the maintenance of the tree planting is of greater importance than that of the planting itself. Ample provision should be made for the control of insect attack so prevalent in many sections of our most beautiful countryside, whether such work be under the control of the State, County, or Municipality. The matter of pruning and thinning of such planting should be amply provided for especially where the wire obstacle is at all serious so that when necessary cuttings are made they may be done under the direct supervision of a trained forester rather than by the usual ax and saw of the lineman whose only interest is in the question of good wiring.

**A SHADY SPOT**

Shade cast upon the roadside during hot summer days when travel is extremely heavy, aids greatly in making the highway more durable.

We are most fortunate in the wide range of planting material from which to select for general roadside planting. It is usually found that no such limitations as are found in practically every city, town, or village, in the way of narrow streets and of buildings in close proximity to the street, need come into consideration in selecting our planting stock. The American Elm and the Sugar Maple have been planted through the Eastern part of the country greatly in excess of other varieties and where the Elm Leaf Beetle and other insects attacking the elm are not found, the continued use of this variety is recommended along the wider highways, for no other tree can add more to the dignity and charm of the roadside than this variety. The Norway Maple can and should be substituted for the Sugar Maple where the Maple Borer is present in any one region, as this does not attack the Norway variety. This tree grows into very symmetrical form and is coming into universal favor for both roadside and town planting. In many respects the Oriental Plane is worthy of greater use where the winter conditions allow this variety to be planted. Various species of Walnut and Hickory are also recommended. In fact, many varieties of trees can be enumerated as being well adapted for roadside planting, though aside from the varieties mentioned above, those which should be brought into greater prominence are the Scarlet Oak, Pin Oak, White Ash, Horse Chestnut, Willows in variety, Hackberry, and Dogwood. For the secondary or shrub plantings it will be found in most cases that large masses of native material is desirable. If each state in making such plantings might be held in its selection to plants indigenous to its own particular locality, the effect would be most delightful and such plantations should grow luxuriantly under a favorable environment. Such shrubs as the Grey Dogwood, the Viburnums in variety, Highbush Huckleberry, Elders and Alders are typical of the native material found along many of the Eastern highways aside from the states so fortunate as to include in their list the charming Mountain Laurel. The native roses are also highly desirable for large mass plantings and their effect upon the roadside during the early spring is most pleasing.

That we have neglected the use of the conifers, especially the pine and spruces, in our roadside work is known to us all. Now that such plantings are to be carried out and demonstration plantings are being made which will, in a sense, serve as model plantings, we should most certainly include the conifers whenever possible and practical in our planting list. Long rows of pines along the roadside growing luxuriantly and perfectly at home in their surrounding have much to recommend themselves for greater use. A most delightful contrast is also secured by mixing the decidious trees and shrubs with the conifers, thereby adding to the general effect of the roadside either in summer or in winter a warmth and charm pleasing to all.

**The Welfare Committee for Lumbermen and Foresters in War Service has been notified of the arrival at Hoboken, February 12th, on the U. S. S. North Carolina, of the 12th Battalion, 20th Engineers (Forest). Also the 32nd Company, 11th Battalion, 18 officers and 850 men. They will remain at Camp Mills several days prior to their demobilization. These battalions were formerly of the 1st and 2nd Companies, 10th Engineers (Forest).**

# FEBRUARY---AND PLANT-LIFE STILL SLEEPS IN NORTHERN CLIMES

BY R. W. SHUFELDT, M. D., R. A. O. U., ETC.

(Photographs by the Author)

THROUGHOUT New England — indeed often throughout the entire State of New York—typical winter weather usually prevails during the entire month of February, with plenty of snow and ice everywhere. Rarely is the reverse the case; while, as we proceed southward and pass below the mid-tier of Atlantic States, the woods, the fields, the streams—one and all—appear very much as we see them in early spring still farther South. In eastern Virginia, for example, the meadows may remain green during some winters; and while most trees will have, many weeks before, parted with their leaves, yet, here and there a few dandelions, and perhaps other flowers, have bloomed all through this month, in situations sheltered from the more searching winds of winter. It is needless to say that, as we proceed still further southward, for example into that land of flowers, Florida, the sequence of growing vegetation is perpetual.

To return northward again, however, we may, on one of our tramps along some roadside, meet with a Bittersweet vine (*Solanum dulcamara*), which, though it has lost most of its leaves, nevertheless has remaining

THIS IS AN AUTUMN SCENE AT THE NATION'S CAPITAL

Fig. 1—The waterfall at Pierce's Mill, in beautiful Rock Creek Park, Washington, D. C.

upon it bunches of its beautiful, bright red, ovoid berries —the latter having been overlooked by the birds that are fond of them, and are now in evidence of the plant's hardiness; these berries are of a rich dark green. In turning, they first become a fine yellow, passing to a deep orange, and finally to the brilliant scarlet noted above.

BITTERSWEET BELONGS TO THE NIGHTSHADE FAMILY(*Solanaceae*); RANK-SCENTED VINES, THE FRUIT OF WHICH IS OFTEN SAID TO BE EXTREMELY POISONOUS

Fig. 2—Linnaeus designated this vine as *Solanum dulcamara*; its elegant, red, ovoid berries are well known to us in the autumn.

This vine is also known by the common names of snake or scarlet berry; blue bindweed; nightshade; poison flower, and perhaps others. It would appear that the reputation it once bore of being "deadly poisonous" has, long ago, been exploded—surely none of its near relatives are, among which may be numbered the eggplant of our gardens, as well as the tomato and potato. In Figure 2 are well shown some of its graceful purple flowers, with their pointed, yellow centers. Often a few of these are found in good shape on the vine at the same time when the bunches of berries have assumed their gorgeous scarlet skins. Note the curious form of the leaves of this vine, with the little winglets near the base of each. Often we find this vine growing on our fences, or even upon some support or other in our backyards. Professor Gray states that the derivation of the name *Solanum* is not known, which, of course, applies to the scientific name of the entire Nightshade family—the *Solanaceae;* while others claim that it is derived from *solamen,* consolation, solace, and so on, which has reference to the narcotic properties afforded by a number of the tropical relatives of this vine; and the genus is one containing an enormous number of species. The specific name appears, without doubt, to be derived from *dulcis,* sweet, and *amaras,* sour or bitter; for the juice of the vine most assuredly produces the double impression upon our sense of taste.

The common garden Nightshade or Morel bears black berries, the poisonous qualities of which have not been fully disproved. Perhaps it is just as well not to test this by chewing them and swallowing the juice. This vine is the *Solanum nigrum* of the botanies, and it is well-nigh cosmopolitan in its distribution. Its flowers are *white.* We have another vine we call "bittersweet," and it may be known in the autumn by its gorgeous

THE ASTERS OF THE *Compositae* CONSTITUTE A VERY NUMEROUS, NOT TO SAY PUZZLING GROUP OR GENUS TO STUDY. THEY HYBRIDIZE FREELY; BUT THERE APPEAR TO BE UPWARDS OF AN HUNDRED GOOD SPECIES OF THEM IN THE ATLANTIC STATES ALONE

Fig. 7—This is the common Purple Aster (*Aster patens*), also called the Purple Daisy. The caterpillar is the one the children call the "black bear." There is a triple-banded one like it—deep chestnut and black. They are the first species of larvae of this kind making their appearance in the spring.

yellow berries, which, when bursting open, have elegant scarlet seeds. A bunch of these is very decorative in a vase indoors, and their lasting properties are truly wonderful.

During this month of February, we will find that many plants have gone to seed, and a very interesting one among these is the Angle-pod, here shown in Fig-

SOME OF THE CLOSE RELATIVES OF THE MILKWEEDS ARE CLIMBING VINES, GROWING IN WET PLACES. THIS ONE, *Gonolobus laevis*, BELONGS RIGHT IN THAT FAMILY

Fig. 3—Angle-pod is the common name for this vine, the seeds of which are tufted as we find them in the true milkweeds (*Asclepias*).

SOME INTERESTING PLANTS ARE FOUND IN THE CROWFOOT FAMILY (*Ranunculaceae*), AND THE THIMBLEWEED OR TALL ANEMONE IS ONE OF THEM (*Anemone virginiana*)

Fig. 5—When this species of Thimble-weed goes to seed, its fruit-heads remind one of common, medium seized thimbles, as they are represented here in this cut.

ure 3. In dense thickets, along the banks of sluggish rivers and canals, it flourishes from Pennsylvania, westward to Illinois, and southward through Kansas to the Gulf. Although a "perennial twining herb, smooth, with opposite, heart-ovate and pointed, long-petioled leaves, with small flowers in raceme-like clusters on slender axillary peduncles" (Gray), it nevertheless has a seed-pod almost exactly like the one borne in the autumn on some of our species of milkweeds. When we open one of these pods, we find the tufted seeds, arranged almost exactly as they are in the pods of some of the slender-pod *Asclepias* of the Milkweed family (*Asclepiadaceae*). The vine has been called Angle-pod from its angled fruit, the name being derived from two Greek words meaning an *angle* and a *pod*.

The vine and its pod is of a specimen found growing on the banks of the Georgetown Canal, a little more than a mile west of Washington. Some day we will show what the flowers look like, when a clearer idea may be obtained of their milkweed affinities.

Some plants are especially beautiful and attractive when they go to seed, and they may retain this state throughout the entire winter. Among these we have in mind the common Daisy Fleabane (Fig. 4), an abundant roadside species in the region where it flourishes. These Fleabanes are closely related to the Asters of the *Compositae,* and the group contains such well-known flowering plants as the Horseweed (*E. canadensis*) and Robin's Plantain (*E. pulchellus*). The name is composed of two Greek words meaning "spring" and "an old man," referring to the hairiness of the stems when the plants are in flower,—that is, hairy in the *spring time,*—one of the *Senecio* names. Gray also gives *Euerigeron.*

Referring to two of the Fleabanes, a popular writer at hand says: "That either of these plants, or the pinkish, small-flowered, strong-scented Salt-marsh Fleabane (*Pulchea camphorata*), drive away fleas, is believed only by those who have not used them dried, reduced to powder, and sprinkled in kennels, from which, however, they have been known to drive away dogs."

In these February days, in the woods and fields from Maine to South Carolina,

WHEN THE DAISY FLEABANE GOES TO SEED, ITS TUFTED FRUIT—FLUFFY BALLS OF A RICH TAN—CONSTITUTE ONE OF THE ATTRACTIONS OF THE LANES AND ROADSIDES

Fig. 4—*Erigeron annuus* of the great Composite family (*Compositae*), may be easily recognized by its hairy stem and the little leaf in the angle of its branching stems.

ALONG STREAMS AND BORDERS OF SWAMPS AND MARSHES IN NOVEMBER, THE WELL-KNOWN SHRUB WE CALL SPECKLED OR HOARY ALDER APPEARS AS SHOWN IN THIS CUT

Fig. 6—Alders belong to the Birch family (*Betulaceae*), the species here shown being the *Alnus incana* of the botanies.

WILD GARLIC IS USUALLY FOUND GROWING IN WET MEADOWS, OR ALONG THE SHORES OF BAYS AND RIVERS, ALL ALONG THE ATLANTIC COAST LINE. WITH OTHER SPECIES, THEY BELONG TO THE LILY FAMILY.

Fig. 8—Numerous species of Wild Onions or Garlic (*Allium*) occur in our eastern flora. This is *Allium canadense*, the specific name being the old Latin one for garlic.

we often meet with the Thimble-weed, the plant having gone to seed at this season. (Fig. 5.) Many of us know it as the common tall anemone of the waste places, roadsides and brakes along the margins of the woods. Mathews says: "The flowers generally have five inconspicuous sepals, white or greenish white inside and greener outside; the flower-head, usually one inch or less across, is succeeded by the enlarged fruit-head similar in shape to and about as large as a good-sized thimble." Honeybees and bumblebees are the insects chiefly responsible for the fertilization of the Thimble-weed's flowers; but they are assisted in this by some very brilliant little flies (*Syrphidae*), which one may easily detect by watching the flowers when they bloom, about the middle of June and later to include August. We have a pretty long list of anemones in our flora, and they are all regarded with great affection by those who love the woods and fields. Our revered Professor Gray tells us that the name Anemone is of ancient Greek and Latin derivation, "a corruption of *Naman*, the Semitic name for *Adonis*, from whose blood the crimson-flowered *Anemone* of the Orient is said to have sprung."

Sometimes we find the seeded Thimble-weed heads sticking up above the snow in the middle of the winter, or even when the snow is melting in the early spring. During this part of the year, too, the alder bushes along our streams and borders of our marshlands appear as they are here illustrated in Figure 6. This is the common or Speckled Alder, also called the Hoary Alder (*Alnus incana*). Commonly it is a shrub, while on the other hand some specimens may grow to become so tall and big as to really demand being relegated to the tree class. The

FREQUENTLY WE MEET WITH EXAMPLES OF THE TALL THISTLE (*Circium altissimum*) THAT HAVE GROWN TO BECOME TEN FEET IN HEIGHT; HERE IS A MARYLAND SPECIMEN THAT WAS FULLY THAT TALL

Fig. 9—Thistles, of which we have a great many species, belong to the *Compositae*. In their relations they stand next to the much smaller genus of Burdocks (*Arctium*), the flowers of which have a thistle-like appearance.

THISTLES GROW SO CLOSE TOGETHER SOMETIMES, THAT ONE CANNOT PASS AMONG THEM EXCEPT AT THE RISK OF MANY PAINFUL PUNCTURES FROM THEIR STRONG SPINES

Fig. 10—This is a late autumn or early winter group of common thistles; and we cannot but admire their fruiting even though the plant offends in all other particulars.

one in the cut—that is its twigs—were taken from a "shrub" fully ten feet in height. It is well known in the dendroflora of many parts of Europe, and the ancient Latins bestowed the name of Alnus upon it. We have several species of these alders in our country, as the Smooth Alder (*A. rugosa*), the Black Alder (*A. vulgaris*)—which is a tree sure enough—and the Seaside Alder, which is likewise a small tree. This last species is only found in Delaware and Maryland, not far from the Atlantic coast-line; it has also been discovered in Oklahoma (*A. maritima*). Then there is the Green or Mountain Alder (*A. crispa*) and the Downy Green, the *Alnus mollis*.

Newhall says of the alders that they bear *"staminate flowers,* in long, drooping clusters, with three (sometimes six) blossoms, and four or five small bracts to each shield-shaped scale. *Pistillate flowers,* in oval or oblong clusters, with two or three blossoms to each fleshy scale. *Scales* or *bracts,* woody in fruit." Further on: *"Fruit,* in 'cones,' sometimes winged, scale-like, cluster. A scale-like nut." These woody scales and bracts in threes and the "cones" are shown in Figure 6 of the present article.

There are over sixty different kinds of asters in the native flora of the northern and middle Atlantic tier of States, and some of them support almost perfect flowers far into the late autumn; indeed, a great many of them, even the northern varieties, do not begin to bloom until October or early November. (Figure 7.) This is the reason some people have bestowed the name of "Frost-flower" upon them in the North, while further South they are known as "Starworts." As we know, the *rays* of many of the species are of a rich purple; but then there are other species in which they may be white, blue, or even pink. In the case of the "disk," it is usually yellow, but later on this may change to purple. Botanists have long been familiar with the fact that these asters are quite prone to hybridize; and, as a consequence, the limits between any two species is frequently but poorly defined. Asters stand about in the middle of the Composite family (*Compositae*), and are quite typical of this enormous group of flowers; in fact, it is our largest family of phaenogamous plants, or plants that have flowers developing both pistils and stamens, and, in fruiting, produce seed. Asters, like the daisies and black-eyed Susans, fall in the ray-flower group of the *Compositae*—so called from the fact that the corolla is made up of radiating "petals" springing from the periphery of a central disk, which latter is composed of the true flowers; these are very small and tubular. By examining a daisy or an aster with a good hand lens, much of this will be revealed to you.

HERE IS A MOST BEAUTIFUL AND, IN THE CASE OF THE MALE, AN ELEGANTLY COLORED LITTLE LIZARD FROM FLORIDA

Fig. 13—Wood's Swift (*Sceloporus u. woodi*), of which this is a male, has only been very recently described.

We speak of the corolla of an aster as being "strap-shaped" (*ligulate*), while in many other kinds of the *Compositae* it is tubular, as in the case of the flowers of the Ironweed (*Vernonia*). The Aster in Figure 7 of this article clearly exhibits all the characters mentioned. Wild Garlic (Fig. 8) is a plant that may persist far into the autumn, and it may be readily recognized—as an *onion*—by its small bulb with fibrous coats, closely resembling a small onion. Two of these are shown in the figure, which is a specimen collected along the Virginia banks of the Potomac River, not far from Mount Vernon. Like all the onion group, all parts of the plant are strong-scented and pungent. The long, slender, cylindrical stems spring direct—in any single plant—from the apex of the bulb, as shown in the cut, and its upper extremity supports the extraordinary appearing flower head. These last are often few in number and sometimes even absent. There are some eight or ten species of the Wild Onions, Leeks, or Wild Garlics in the northeastern United States, and they are interesting plants to study.

Of all the groups of plants in the Middle-States section of our country, none brings more home the fact that winter has—as yet—not fully made up its mind to leave us—than the Thistles. Take, for example,

the big fellow here shown in Figure 9, and note how it towers among a perfect army of different species of plants, every one of which has gone to seed several months or more ago. Nearly all the seeds of this plant have been borne away by their feathery tufts, and there is scarcely a single meal left for some solitary goldfinch that may, with his long undulating

OUR SAW-WHET OWL IS A VERY ATTRACTIVE LITTLE BIRD, AND IN FEBRUARY WE MAY OCCASIONALLY MEET WITH ONE IN THE WOODS

Fig. 12—His place is among the smaller members of his family, and ornithologists call him *Cryptoglaux a. arcadica*. He sleeps nearly all day long.

dips a-wing, come that way. One naturally associates these goldfinches with the thistles-gone-to-seed—occasionally so vividly that it requires no stretch of the imagination to hear their plaintive notes, although the little black-and-yellow fellows may be nowhere near. This is especially the case when the plants are growing in masses, as they are here shown in Figure 10.

Aside from studying flowers when they are in the enjoyment of their perfect and normal condition, there is another most interesting chapter in their lives which deserves our earnest consideration and exhaustive research. Reference is made to their diseased states, or other manifestations in them indicating various departures from the healthy ones. This is a very large and very important subject, and much attention has already been paid to it by phytopathologists, or those who take into consideration the diseases of plants, shrubs, and trees.

Diseases of a great many different natures may attack any part of any vegetable growth—as the stem, the trunk, or any of the branching portions. Flowers, seeds, pods, leaves, roots, bark—indeed any of the numerous structures of plants are subject to disease, to the attacks of parasites, to fractures or other injuries, burns and scalds, lightning strokes, strangulations, impact of foreign bodies, drowning effects of excessive solar heat, and many other liabilities. In Figure 11 we have an example of the effects of an attack on the part of some parasite on the leaves and flowers of the common wild Sunflower. In a previous number of AMERICAN FORESTRY it was

SOME PLANTS ARE PARTICULAR VICTIMS OF PARASITIC GROWTHS; HERE WE HAVE SOME VERY REMARKABLE ONES ON THE WILD SUNFLOWER (*Helianthus decapetalus*)

Fig. 11—These big bulbs are caused by the sting of an insect, the larvae of which we may find by cutting one of them open. The flower is frequently included in the pathologic growth, as may be noted here.

shown how oak-galls were produced through the attack of certain species of insects, and what an important industry resulted from ascertaining the value to man of these products.

February, especially in the more northern States, is the month when the owls make themselves heard in the land.

The nights are cold; the moon shines with a peculiar brilliancy, and we are liable to have a snow-storm or two. It is then that we hear the familiar notes of the owls, either late of an evening or during the early morning hours. Of these, perhaps the notes of the Screech Owl are most often heard, and next to this species, maybe, the Great Horned Owl. Once in a while, however, come the curious notes of our little Saw-whet Owl (*C. a. arcadica*), although this bird may most often be heard during the daytime. The notes so closely resemble the filing of a saw, that the bird, long years ago, received its vernacular name from that fact. This cute little owl—one of the pygmies of the group—has the habit, during the daytime, of sitting out in plain sight and falling fast asleep. He may choose the top twig of some isolated bush in an open field, or the dead, projecting limb of a tree occupying a similar situation. His appearance on such occasions is well shown in Figure 12 of the present article. This little owl has frequently been made captive and kept as a pet; but it is the exception to have it thrive under such conditions. It seems to demand considerable exercise and the same kind of food it secures in nature.

THIS IS A MOST UNUSUAL IF NOT UNIQUE PICTURE, TAKEN IN SITU, OF THE HARLEQUIN MILKWEED CATERPILLAR

Fig. 14—Drury gave the moth of this insect its scientific name, which is *Euchaetias egle*.

Passing from owls to lizards, it is an interesting fact to note that, old as our country is in point of settlement, we still meet with undescribed species of animals, even in the long-settled districts. This was the case with the very beautiful little lizard here published for the first time in Figure 13. The specimen was received by the writer alive from Haines City, Florida, sent him by Mr. R. H. Young, a member of the American Forestry Association, who had secured it near his home. Several others of the same species accompanied it, both dead and living ones, as well as others in spirits. Both sexes were represented, the males being much the handsomer, with their sides striped with jet black, and the under parts—throat and middle sides—of a brilliant blue, bordered with the same intense black.

The writer was about to describe this lizard as new, when it was discovered that one of the curators of the National Museum had a description of it up in type and about to appear. It belongs to the lizards we call "Swifts" in the vernacular, and *Sceloporus* in technical science. This one received the name of *S. u. woodi*, being named for Mr. Nelson R. Wood. Mr. Young describes it as one of the swiftest of the swift, and is captured only with the greatest difficulty. It is a perfectly harmless little fellow, and subsists chiefly upon insects of various species.

We have a good many species and subspecies of these swifts in various parts of the United States, this being one of the smaller forms. Others are considerably larger, perhaps three or four times as large. They are perfectly harmless little creatures and are frequently kept as pets. We have no venomous lizards in our reptilian fauna, although very many people regard with distrust and suspicion the famous "Gila Monster" or *Heloderma*.

The interesting subject presented in Figure 14 is a very unusual one, as it was taken without disturbing a single thing shown in the picture. In the lower left-hand corner is seen the white bud of the Bindweed, and above it, slightly to the right, some flowers of the Blue Boneset. Several other plants are included—among them a withered thistle. What is most interesting, however, is the central subject, the one for which this picture was taken. This consists of three pods of the common Milkweed,

terminating the stem of one of those plants, with another pod lower down. On the central, horizontally disposed, upper pod, are six very curious-looking caterpillars; they are very hairy little creatures, the hair being regularly arranged in tufts. Where it is dark it is black, while the lighter tufts are of a buffy orange and light brown. These are the caterpillars of the Milkweed moth (*Euchaetias egle*), and they were taken natural size on a six and a half by eight and a half plate, the locality being Great Falls, southern Maryland, a few miles northwest of Washington, D. C.

This Milkweed moth is a very abundant representative of its genus, ranging throughout the Atlantic States, westward beyond the Mississippi Valley. It is a very modest-appearing little moth, with an expanse of wing measuring about four centimeters. Hampson has given us a detailed figure of it, and Holland has likewise done so in color. From the last it would appear that its wings —both pairs—are of a pale grayish brown, and there is a median row of some seven or eight fine black dots on the abdomen above. This row of dots is quite characteristic of several of the allied forms of this genus of moths.

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# EMERGENCY FEED FROM DESERT PLANTS

AN emergency drought-time feed for southwestern stockmen which has previously been overlooked is the desert shrub locally known as soapweed. Its scientific name is Yucca. While this plant is not high in nutritive value nor suitable for feed until it has been properly ground, the specialists of the United States Department of Agriculture have found that in seasons of drought when range grasses and other sources of feed fail, it can be used to save cattle and sheep from starving. By the addition of a little cottonseed meal with ground Yucca a fairly well balanced ration is made. By using this feed without waste in dry seasons only, a fair crop will always be available. If it is used properly and due regard given to conserving the present supply, thousands of cattle may be saved during the drought season to add to the nation's meat supply.

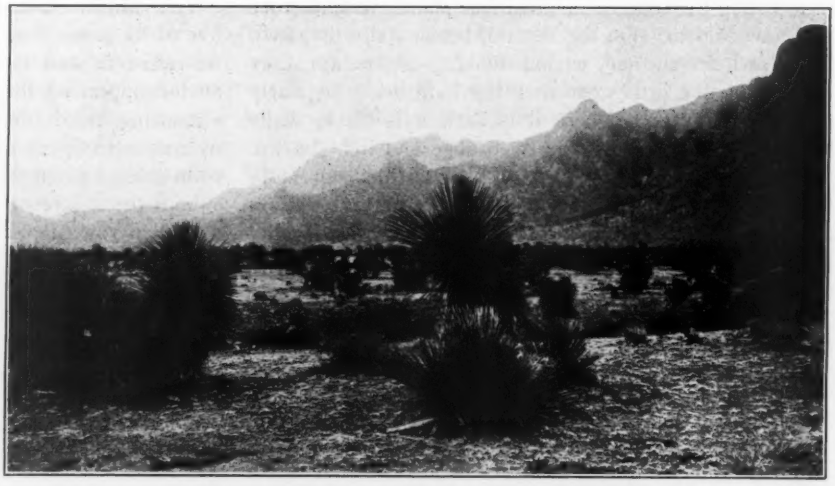
CHOPPING AND SHREDDING YUCCA FOR CATTLE FEED

It is eagerly eaten by the cow, even though this particular milch animal was not in a starving condition, as were those which had tried to subsist solely on range vegetation.

There are a score or more species of Yucca. Sotol has been utilized as stock feed for some years, but only recently have soap weed and bear grass, two other forms

which grow abundantly, been utilized in this way. Both of the latter are well adapted for feed, but because the food material is found mainly in the tree-like trunk it is necessary that they be ground or chopped finely before stock can eat them.

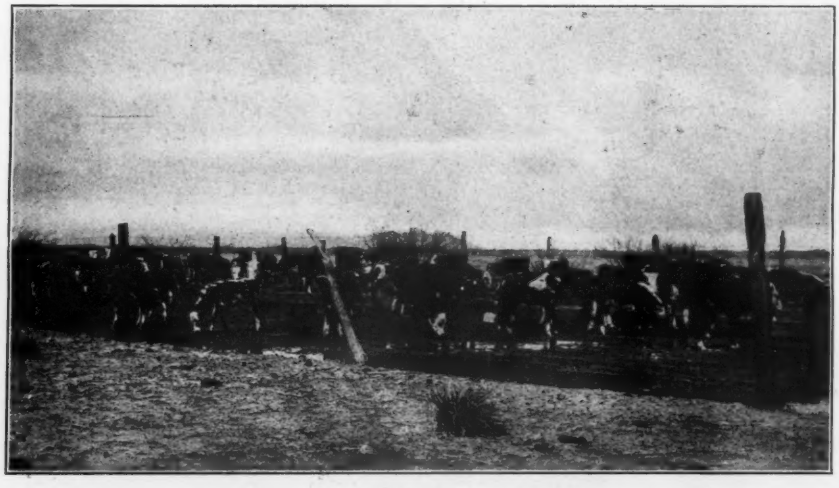
The machines used for cutting Yucca have heavy cylinders carrying teeth or knives that rotate before a chopping block to which the plants are fed. One of the larger machines run by a 12 or 14 horsepower engine with a crew of 3 men will chop or shred about two tons of soapweed an hour.



A TYPICAL STAND OF YUCCA, OR SOAP-WEED

This will furnish an emergency food for dry seasons when other range plants fail.

If fed alone, this feed may be expected to keep stock from starving; if fed with concentrates a properly balanced ration may be worked out. The customary practice among users of this feed is to give young stock six to twelve pounds per day with one-half to three-fourths of a pound of cottonseed cake or meal. Mature stock are given 20 to 40 pounds and 1 to 2 pounds of the cottonseed concentrate daily. Fifteen to 25 pounds per day fed alone will save stock from dying. Practically the only cost in using this feed is in its preparation and it is estimated that when 20 pounds is fed per day this cost amounts to only 50 cents per month.



SAVED FROM DEATH BY STARVATION

Bunch of cattle which were saved from starvation by the feeding of Yucca, or soap-weed. Some of the stock here shown were unable to get to their feet without assistance before the Yucca was fed.

Yucca should be regarded as an emergency feed only, the specialists say. It makes a very slow growth and only two species—soap weed and bear grass—may be expected to renew themselves if cut off. The bear grass of the New Mexico-Texas plains region will produce a new crop in three or four years, while soap weed requires from ten to fifteen years.

## GOVERNOR LOWDEN ENDORSES TREE PLANTING

THE importance of wood as building material and the necessity for conservation of trees is recognized by Gov. Frank O. Lowden of Illinois as paramount issues in the economic life of the country. He has often urged tree planting in the state.

In a recent article in the Chicago *Tribune* Governor Lowden said:

"I know of no single acre of land in Illinois, even though it be not suited to cultivation, that cannot be made to produce trees successfully. We shall, if we are wise, make laws whereby every acre, which will not produce wheat or corn, will be made to grow trees.

"It may be that we shall be wise enough to exempt these lands from taxation, saying to the owner: 'Plant this little tract to trees and we shall tax you nothing, requiring only that when your children or your grandchildren harvest them they shall pay a fair percentage of the proceeds into the treasury of the state.'"

"You would not only set these little acres to work for the profit of both the state and the owner, but the growing forest upon the farm will help to tie the children to the farm."

# THE PLOVERS

(Family Charadriidae)

BY A. A. ALLEN

ASSISTANT PROFESSOR OF ORNITHOLOGY, CORNELL UNIVERSITY

IF TRAVEL is an education, the plovers must be a highly educated family. With their near relatives the sandpipers, they hold, with one exception, all records for long distance flights. The one exception is the Arctic tern which nests within the Arctic circle and winters within the Antarctic, traveling some ten thousand miles over the sea twice a year. When it comes to actually seeing the world, however, there is no bird to compete with the golden plover. This bird nests on the Arctic shores of North America and then flies southeast to Labrador, New Brunswick and Nova Scotia. The 2,500 miles of sea between Nova Scotia and South America hold no fears for it and a direct flight is made over the Bermudas and Antilles, often without a stop. The journey is then continued through Venezuela and Brazil to the pampas of Argentine. But not content with seeing so much of the world, this inveterate tourist seeks a different route for the return journey. Starting northwest from Argentine, it crosses Central America and enters the United States by way of the Gulf of Mexico, traveling up the Mississippi Valley to Manitoba and Saskatchewan and thence to its breeding ground along the Arctic shores. The two routes are fully 1,500 miles apart.

The western golden plovers often start from Alaska for a direct flight to the Hawaiian Islands and thence to the islands of the South Sea. The golden plovers that nest along the Arctic shores of Europe and Asia and winter from India to South Africa, are only slightly different from the American birds and, if we include them, we may certainly claim the whole world in the range of this remarkable bird.

WHAT ARE THE WILD WAVES SAYING?

Here's a fine place for plover and here are a couple of ringnecks and a sanderling.

The golden plover is a bird somewhat smaller than a pigeon with long pointed wings. Its upper parts are spotted with golden yellow and black, and its underparts are uniformly black in summer and grayish white in winter. A white stripe from the forehead down the side of the neck and breast is conspicuous in the summer plumage when set off against the black underparts.

BLACK-BELLIED PLOVER IN FALL PLUMAGE

They are easily distinguished from the golden plover, which they resemble, by the black spot under the wing.

Very similar to the golden plover is the black-bellied plover which has a similar change of plumage with the seasons but always lacks the golden yellow spots of the upper parts. It is equally cosmopolitan, and, in eastern North America, at least, is a more common species. Some of them pass the winter as far north as North Carolina but others continue their

ONE OF THE SMALLER PLOVER

The semipalmated or ring-necked plover is a miniature edition of the Killdeer, but it has only a single band across its breast.

flight to Brazil and Peru. Both species are similar in habits, frequenting shores and mud flats or even ploughed fields or pastures. They fly in close flocks and appear not unlike small ducks at a distance. Upon alighting they scatter to feed, running along the beach in search of stranded aquatic insects and crustaceans which they pick up with a vigorous tilt of the body as though they were about to dive.

Both the golden and black-bellied plovers are still numbered among the game birds and are hunted either by means of decoys or by stalking them along the shore. They have rich mellow whistles which are quite easily imitated and they may often be drawn down to the decoys from a great height by the hunters.

There are about seventy-five species of plovers in the world of which only eight, including the two mentioned, are found in North America. Of these, by all means the most common and best known is the killdeer, so called from its notes—"kill-dee, kill-dee, kill-dee"—which constantly fill the air wherever these birds occur. They seem to have petulant dispositions and find expression for their feelings through constant noise so that the slightest disturbance of alarm starts them off. The majority of shore-birds are confiding creatures and unless constantly shot at, will allow even the hunters to approach closely. Not so with the killdeer; it seems to have a special aversion for man and espys one approaching at a great distance and starts "kill-deeing" so as to alarm the whole flock, and long before the other shore-birds take wing, it pitches off on a swift, erratic flight to some distant part of the shore. Its wings are long and pointed and the speed which it develops when once under way is as remarkable as the irregular course which it often pursues.

Upon its nesting grounds, and it nests from the Gulf States to British Columbia, it is even noiser than on the shores, though in the defense of its nest it often loses much of its timidity. Indeed when its nest is approached, it will usually trail its wings on the ground and go limping off within a few feet of the intruder in an endeavor to lead him away. The easiest method of finding a killdeer's nest is always to walk in the opposite direction from that in which the bird tries to lead one, noting when it seems to show the greatest distress.

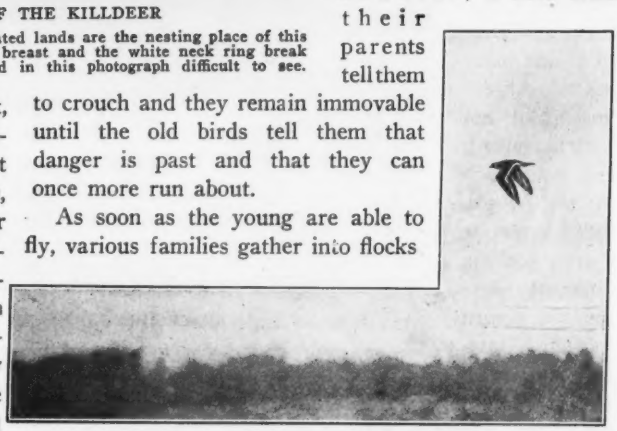
Were it not for the behavior of the killdeer, the nest would be extremely difficult to find for it consists of a mere depression in the gravel or in the soil of the garden wherein are laid four very protectively colored eggs. They are large for the size of the bird, light brownish or drab in ground color, with heavy black markings, and pointed at one end so that they will fit together and be more easily covered by the incubating bird.

THE HOME OF THE KILLDEER

Creek bottoms, pastures and cultivated lands are the nesting place of this bird. The black bands across the breast and the white neck ring break up its contour and make the bird in this photograph difficult to see.

The young killdeers when first hatched are covered with grayish brown down and are even more protectively colored than the eggs so that when they crouch in the nest, they are almost impossible to see. The accompanying photograph of a nest containing three young and one egg will illustrates this point. They are active little creatures and can run about and even swim, shortly after hatching. At the slightest alarm, however, a note from their parents tell them to crouch and they remain immovable until the old birds tell them that danger is past and that they can once more run about.

As soon as the young are able to fly, various families gather into flocks



SEEMS LARGER THAN IT REALLY IS

Because of its long wings, the killdeer appears much larger, when on the wing, than it really is.

A KILLDEER BROODING

The young birds can be seen crowding beneath the wing of the old bird.

and, if the season is dry, make for the shores and mud flats. If it is a rainy season, however, they may be found far from water until late in the fall. Some killdeers remain as far north as New Jersey for the winter but others migrate southward as far as Venezuela and Peru.

Before the passage of the Federal Migratory Bird Law, the killdeer was on the game list and their tiny bodies graced the table of many a "pot hunter." The majority

STANDING GUARD

Note how protectively colored are both the old and young killdeers in spite of their conspicuous marks.

of sportsmen, however, though attracted by their swift flight and apparent size, have always been willing, after once discovering the size of their bodies, to leave them in peace. Today all realize that their value about cultivated fields and pastures during the summer in destroying grasshoppers and other pests, more than equals their slight value as food and are glad to see them given a much deserved protection.

The remaining North American plovers are somewhat similar to the killdeer in general appearance but are smaller. Another difference is that the killdeer has two black bands across its breast while the rest have but one. Another distinctive mark of the killdeer is the rufous patch above the tail. The conspicuous white ring around the neck is shared by all but the plain colored

HIS FIRST SWIM

Young Killdeers can run and even swim very soon after hatching and follow their parents about instead of staying in the nest.

mountain plover of the high arid plains of the West.

The best known of the remaining plovers is the semipalmated or ring-necked plover which breeds in northern North America and spends the winter anywhere from the Gulf States to Patagonia. It seems to prefer sandy beaches to the mud flats and is common during May and again in August and September all along the coast and the shores of inland lakes. Like the killdeer it

JUST OUT

A young Killdeer only a few hours old but already far from home.

appears much larger on the wing than it really is and during the years that it was considered a game bird, even the most callous "game hogs" could not but feel a tinge of regret when they felt the tiny bodies of their

victims. It has a clear cool note of two syllables which is always given when it takes wing and further adds to its charm.

The Wilson's plover of our southern coasts is a very

NEST AND EGGS OF THE KILLDEER

The eggs are large for the size of the bird and very protectively colored. They are pointed at one end and ordinarily fit together like the segments of a pie. Here one of the eggs has been disarranged by the bird's hasty departure. The nest is a mere depression in the gravel.

similar bird but is somewhat larger. The piping plover is a much paler bird and does not have the pronounced breast band of the ring-necked species. It is nowhere a common bird but is found in summer locally from

CAN YOU SEE THEM?

Three young killdeers crowding in the nest and one unhatched egg are here shown. The young birds are even more protectively colored than the eggs and crouch at the slightest alarm and this makes them very difficult to find.

Saskatchewan to Virginia. The snowy plover of the southwestern states is an even lighter bird with just a suggestion of the breast band and face markings of the other species.

All of the plovers have long legs and relatively shorter toes than the sandpipers with which they usually associate. Their bills are likewise much shorter and are slightly swollen at the tip being suggestive of those of pigeons with which birds, indeed, they are supposed to have much in common.

## NEW YORK FORESTRY AND RECONSTRUCTION

IN AN address before the annual meeting of the New York State Forestry Association held in the Educational Building in Albany, on January 21st, Dr. Hugh P. Baker of the State College of Forestry at Syracuse, who has just returned to his work in the College after sixteen months as an officer in the regular infantry, described the effects of the war upon the forests of the world and discussed the important problem of the development of a land policy for New York and the relation of the forests to water conservation. He emphasized the fact that the period of reconstruction will be the day of the technical man, speaking as follows:

"The turning of nearly every industry in the country from the beaten path of pre-war years into war channels through which was poured unending shiploads of war supplies onto the shores of France, has demonstrated clearly the idea that the time of reconstruction in this country and the period of prosperity which seems to promise to follow reconstruction will be the day of the technical man."

In describing the effect of the war in Northern France, Dr. Baker stated that for the two years ending December, 1918, the total requirements of the Associated Governments were approximately 600 million cubic feet of saw log timber; three quarters of which by volume had to be large sized material. This tremendous demand upon the French forests had to come from a greatly decreased forest area since over 1,230,000 acres of forest land was in the territory occupied by the Germans. The loss of this acreage of forest land meant to France an annual loss of approximately 17½ million cubic feet of saw log timber. The drain upon the French forests for the past four years is estimated to be equivalent to the growth of twenty years. In other words, the growth that would have taken place in the next twenty years in the French forests has already been used. It was shown further that the forest areas of practically every other European country, excepting Russia, have been seriously depleted and that lumber for the rebuilding of the devastated portions of France and Belgium must come from America, as the disorganized condition of Russia will probably not allow that country to come into the world lumber trade for years to come.

In emphasizing the place of the forester in assisting the State of New York in solving its land and water problems, Dr. Baker emphasized the necessity of having a clear understanding of just what forestry means. As agriculture means not alone the growing of a crop of grain but the production of food and draft animals, and the manufacture of the crude products, as in the dairy industry, and finally the marketing of the product, so forestry has been as broadly defined in the 200 years of its application to European forests.

# DIGEST OF OPINIONS ON FORESTRY

**WILL YOU NOT CO-OPERATE WITH US BY IMPRESSING UPON THE EDITOR OF YOUR NEWSPAPER THE IMPORTANCE OF FORESTRY? WRITE TO YOUR NEWSPAPER**

ONE of the most remarkable examples of service to their readers is shown by the editors of the country in their endeavor to present to the readers stories having to do with outdoor life. To the editor, perhaps stronger than any other man, comes the call of the great outdoors. And the editors in a vast majority of cases answer that call less than any other set of workers. But they have the great opportunity to present the beauties of nature and they never weary in this well doing. Columns upon columns are being printed in the various publications of the country today in regard to trees and the value of forestry as a result of the suggestion of the American Forestry Association that memorial trees be planted in honor of the men who lost their lives in the great war and in honor of those who offered their lives. The comment goes into other fields and is here condensed for the readers of the American Forestry Magazine with the request that they in turn keep the importance of forestry before their local editors. There never was such an opportunity for the members of the Association to do a great work and the editors will welcome anything you have to say of a constructive nature.

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Commenting upon memorial tree planting the Milwaukee Journal says:

"It is not enough to build good roads through the country side. We should beautify them."

Then the editor goes into the possibilities and beauties of trees planted along these roads. According to the New York Evening Mail there are "Excellent possibilities for a great national work of forestation presented by a movement started by the American Forestry Association for the planting of victory oaks or victory elms to commemorate the soldiers who laid down their lives on the battlefield."

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The Florida Times-Union of Jacksonville points out that Florida's prosperity depends on its rescuing of the forests far more than most persons are aware. A dispatch to the Philadelphia North American dated at Harrisburgh, by H. G. Andrews, points out the immense income that is possible through the forests of Pennsylvania. The article goes on to show those possibilities, how the chestnut trees have been killed by the blight and points to much constructive work that can be done.

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The Christian Science Monitor calls attention to the fact that the Maine Legislature will take up the question of a state forest reserve while an editorial in another number says:

"Practical forestry is being presented as a line of work to interest returned soldiers who have grown to love an outdoor life."

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The importance of forestry is so great in the eyes of the editors of the Dallas Evening Journal that in an editorial they suggest that it be taught in the public schools. The Journal adds:

"The destruction of timber in the last half century has been little short of criminal. The way of the father has been foolish and their sons should be pointed the wiser way."

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The Realty Magazine of New York gives the lead position to the value of tree planting in home making and uses many pictures. The Farm Journal of Philadelphia has an article by Charles P. Shoffner who writes:

"Now and then a suggestion is made that strikes thirteen. Here is one by the American Forestry Association that rings true. They say: 'let a tree be planted in memory of each fallen hero.' Could a finer tribute be paid? There is something so beautiful, so noble and so uplifting about a tree that makes it a memorial worth while."

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Memorial Tree planting is a move in the right direction, says the editor of the Metropolis at Jacksonville, Fla., who goes on to say: The announcement that the Women's Clubs of Florida intend to urge the planting of trees, as memorials to brave men who entered their country's service in the world war, is a move in the right direction. It indicates a move that has everything to commend it. It is both patriotic in spirit and leading the way to a greater and more general appreciation of trees.

Trees in themselves are a thing of beauty and of utility in the Creator's design of the universe as a place fit for human habitation.

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The work of the foresters in France has always been an interesting subject to the editors, and they have carried many feature stories on this work. That a Frenchman knows how to grow a tree while an American knows best how to cut it down, and turn it into lumber, is the conclusion of Captain J. K. deLoach of Atlanta, Georgia, who has been in charge of the machinery of the mills operated by the United States Army in the vicinity of Vourges, France, where the Twentieth Engineers (Forest) have been producing large proportions of the lumber used.

"Before we came into the bourges region," says Captain deLoach, in the Baltimore Sun, "there were nine French mills operating, getting out a total of 10,000 feet a day. Under pressure recently, one of our American mills turned out 70,000 feet in three days. A hurry call came through for road plank to be used in the Argonne so that artillery and transport could be kept moving forward without sticking in the mud. This one mill, planned to produce 10,000 feet a day, averaged more than 22,000.

"Under normal conditions we use culls for road plank, but there was not time to select or choose in this emergency. We went through everything as it came. The planks were all five inches thick and we turned out some more than 12 inches wide as fine, clear stuff as I ever saw. War is certainly wasteful.

"The French lumbermen come close to tears as they see the speed with which we fell and cut their trees which they have carefully tended for decades. There is small chance of their adopting our methods. They say we are too fast; that it takes too long to raise a tree to cut it up so quickly.

"The American foresters have done wonderful work under difficult conditions. Away off in lonely camps they have had none of the stimulus which comes with excitement and it has been hard for them to keep going with enthusiasm at top speed. The Young Men's Christian Association has helped greatly. It establishes huts and tents out in the camps, gets supplies, entertainment, motion-pictures, reading matter, athletic supplies, writing material and even pianos to the men, makes life bearable and so keep spirits up."

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A survey of the forests in Cook County, Illinois, furnished a very interesting and amusing story for the Chicago Tribune. The picture of the beauties of the woods in winter is well told and the whole story tells the trip of the Armour Club and the Prairie Club. The expedition was under the guidance of Dr. Jorgenson, director of Armour Gymnasium and the Chicago Tribune gives nearly three columns to the discoveries made by the two clubs. In these days of paper conservation it will be understood that it takes what editors call a "Corking Good Story" to get that space.

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The Trenton, New Jersey, Times in an editorial says there is a special message for Trenton because of the suggestion of Dr. Frederick of the Art School, in regard to a civic center. This is to include the site of the city's new hotel and a proposed war monument. This special message means much to Trenton, the Times points out because:

"The President of the American Forestry Association and the head of the National War Garden Commission, misses no opportunity to get things planted and it will be well if people generally will follow his lead. He urges the planting of trees and the planting of gardens particularly during the coming spring and summer. There is need for united and persistent effort in both directions. Just now Mr. Pack is especially interested in the planting of trees as memorials

for the American boys who paid the supreme sacrifice in the war for democracy. He points out that in addition to being beautiful living memorials to the nation's heroic dead these trees we plant will be a thing of beauty and joy forever to those who live not only now but in the years to come and in some places it may be deemed advisable and possible to set out great forests in honor of the soldier dead."

The Times then goes on to point out what can be done with the proposed civic center if adorned with trees not only as memorials but as an artistic setting for the city plaza and any buildings that may be erected on it.

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In a special dispatch to the New York World from Greensboro, North Carolina, the statement is made that:

"Unless some action is taken by the Federal Government, and that quickly, the Brevard section and with it much of the best farming and timber land in western North Carolina will be washed away by the high water during the next five years. During the last year this section has experienced three damaging floods."

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According to the Houston Post:

"The Texas Forestry Association has never received the attention that organization deserves from the people of Texas. With 25,000,000 acres in woodlands, Texas has a greater interest in the present forests than has any other state. With more than that number of acres in what appears at times to be desert, Texas cannot afford to ignore the forestry problem."

The editorial goes on to say that W. Goodrich Jones, President of the Texas Forestry Association, has sent to the papers of the state letters in which he pleads with the press for the forests of Texas and the Post adds:

"The State Forestry Department deserves the intelligent support of the legislature."

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A great lesson has been learned from the war, the Northwestern of Oshkosh, Wisconsin, points out in an editorial:

"More attention to Forestry."

Scientific forestry now is being taught at twenty-three universities and colleges in the country, the Northwestern says, and points to the heavy drain on lumber supplies and the fact that the coming period of reconstruction will perhaps call for even larger quantities of the raw materials furnished by the lumber industries. The Inquirer of Owensboro, Ky., comments on the offer of the American Forestry Association to help reforest France and points out the great opportunity for further cementing the cordial relations of the two countries.

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The memorial tree suggestion is very pleasing to the editor of The Times at Chattanooga who says:

"It is a fine thought that we should plant trees in memory of the men who gave their lives to the nation in the great war. More and more the common sense thought of people is steering away from the notion of respect for the dead by erecting over them at home or elsewhere monuments of dead stone; structures often the very reverse of artistic or ornamental."

Chattanooga, The Times goes on to say, is subject to some extent to the "Monument Habit." The planting of memorial trees gives a new significance to the next Arbor Day, writes the editor of the Geneva, N. Y. Times:

"There is hardly a community in America," continues the Times, "to which the suggestion is not a practical appeal."

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In an editorial in The Post of Boston, the editor points out that Lynn City Council has taken action in the matter of memorial trees and says the Post:

"The beauty and fitness of these planted memorials is very apparent. Trees are always things of grace and as proposed would be growing stars of service well done. How could the memory of our heroes be better perpetuated than in a beautiful forest park?"

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The Observer at Hoboken, N. J., comments on a suggestion to make community Christmas trees permanent.

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Papers of Illinois are commenting generally on the suggestion for tree planting made by Governor Lowden:

"So great is the need of more trees," says the Clinton, Illinois, Public "and so manifest their benefit to future generations that society would be justified in going to great lengths in stimulating tree cultivation."

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The Review of Decatur adds its indorsement to tree planting. The Hayfield, Minnesota, Herald in an editorial suggests that the planting be not attempted all in one year, but that every Arbor Day be made a memorial tree planting day. The editor of the Press at Utica points out that:

"If three or four thousand trees were planted in Utica as memorials for soldiers who wore the uniform it would be a splendid contribution to the shade, the beauty and the general attractiveness of the place."

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The Dalton, Georgia, Citizen in an editorial says that:

"Out of the maze for suggestions for memorials that have followed the signing of the armistice stands apart from all others because of its simplicity and lasting qualities the suggestion for the planting of a tree for each one who made the supreme sacrifice."

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The editor of the Republican of Columbus, Indiana, says the planting of memorial trees along highways is peculiarly fitting.

"It seems to make visible, says the editor, "that glorious immortality for which the soldier laid down his mortal bod; "

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The American City in an article called "Tree Planting an Important Part of City Reconstruction Program," devotes extensive space to the possibilities of city beautifying. "A great benefit to the people of the state" is the view of W. E. Barber, chairman of the Division of Wild Life Conservation, in a letter to the Milwaukee Journal. The editor of the Lafayette, Indiana, Courier calls the planting of memorial trees a most appropriate method of supplying fitting memorials in honor of our sailors and soldiers. In commenting on the suggestion for planting memorial trees in honor of Colonel Roosevelt, the editor of the Telegram of Portland, Oregon, says:

"We venture to say there is no suggestion that would have pleased this great American better."

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In the opinion of the editor of the Hammond, Ind., Times:

"Colonel Roosevelt deserves a memorial in which the entire nation can take pride" and then it goes on giving an indorsement of the suggestion of the American Forestry Association for planting trees in honor of the Ex-President.

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The Manufacturer's Record carries an article from W. W. Lee, county superintendent of education, Prentis, Miss., who urges a reforestation plan to be undertaken by the school children. Mr. Lee has a plan for organization of pine tree clubs. With pictures to illustrate an article "The Coos County Forests," The Scientific American gives the leading position to an article on the wonders of the region on the western side of the Coast Range Mountains. The Morning Press of East Stroudsburg, Pennsylvania, urges the planting of memorial trees in an editorial in which it used the poem by Joyce Kilmer.

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Editors take up other subjects having to do with outdoor life. In addition to commenting on trees, and their value, the Boston Evening Transcript comments at great length on "The Bird Treaty Makes the Birds Safe." Mr. Winthrop Packard takes up the discussion of the mistatements and the conflicting views given in recent news articles on this subject, and in the introduction to his article says:

"Birds are safe so far as good laws can make them. Let not your heart be troubled."

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In the Denver Post "Lord Ogilvy" has an article pointing out to the farmer why he should make a friend of Bob White.

The Times-Star of Cincinnati, has an editorial on "Man's Ingratitude to the Bird." The editor of the Times-Star points out the tremendous reproduction abilities of the insect, and shows how the world would become a desolate waste and man starved out unless the insects are checked, but says the editor:

"Between man and this state of desolation stand some natural barriers. One of these is the army of birds which feed on insects. With the destruction of the birds who stand guard over our fields and forests, a catastrophe beyond imagination to perceive would ensue. And yet man plunges blindly along the fulfillment of the grim paradox he has conceived. Every year he slays by millions the feathered friends who are his."

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These short reviews, showing what the editors are ready to do in the way of co-operation, should be an inspiration to the members of the American Forestry Association and again the call is issued to each of our members to co-operate with his local editors in every way by calling their attention to forestry needs in his own locality. He will be glad to listen to you or to hear from you if you make your point clear and keep it short.

# FORESTRY PURSUITS FOR DISABLED MEN

THE Federal Board for Vocational Education, which has been charged by Congress with the re-education and rehabilitation of war disabled men, has made an investigation of the subject of forestry and forestry pursuits as offering opportunities for these disabled men to train for.

A surprising amount of interest is being displayed in the subject and it bids fair to become one of the popular courses placed at the disposal of the disabled men.

This education is given at approved universities, land grant colleges and other institutions. The disabled man, if single, is given a support and allowance, or "training fund" of $65 per month, and all his expenses of tuition, material, library and laboratory fees, are paid by the Federal Board. If he is married and lives with his wife during his period of study, he is allowed $75 per month and $10 per month for each child up to three.

When he has completed his course, the Employment Placement Division of the Federal Board will help him in securing a position.

There is no time limit set upon the course. The aim is solely to make a competent, thoroughly trained man out of the student.

The following extracts from the "Opportunity Monograph" on Forestry Pursuits, issued by the Federal Board, will be found of general interest.

*What Forestry Is:*

"Forestry is the business, or the art, or the science, depending on the point of view from which you look at it, of handling forests for timber production or stream-flow protection. It does not, as is often mistakenly thought, have anything to do with fruit trees, or even with street and park trees. The care of these comes under horticulture and arboriculture. Forestry is distinct from either in that it has to do primarily with entire stands of trees, or forests, rather than with individuals. Forests are really nothing more nor less than tree societies, or communities, comparable in many ways with human communities, every member of which has an influence upon and in turn is influenced by its neighbors; and it is this fact that gives to forestry its distinctive character.

"Forestry should also not be confused with lumbering. Lumbering has to do merely with harvesting the trees on any given area, with cutting them, transporting them to the mill, and converting them into lumber or other products. While the chief task of the forester is to manage forest lands, he has to do with the production of trees as well as with their utilization. Forestry is concerned fully as much with the future as with the present. Like agriculture it looks forward to keeping the land continuously productive by the growth of successive crops. Only in the case of forestry the crops instead of being wheat, or rye, or corn, are trees, which in turn can be converted into fuel, fence posts, telephone poles, railroad ties, wood pulp, lumber and a host of other wood products. How much the forests mean to the economic development of a community through the crops which they produce and the employment which they offer is evidenced only too plainly by the desolation which has followed destructive lumbering in many a once prosperous forest region.

"In addition to yielding crops which have a commercial value, forests in mountainous regions perform another important function which is none the less valuable because its benefits are difficult to measure in dollars and cents. By decreasing erosion and regulating stream-flow the mountain forests conserve water for domestic supplies, irrigation, power and navigation, and at the same time help to lessen the damage caused by destructive floods. So far-reaching is this influence and so great is the population affected by it, that the treatment which such forests receive becomes a matter of vital interest to the general public. One of the primary concerns of forestry is to see that forests are handled in such a way as to afford the maximum amount of protection, even if this involves, as it not infrequently does, the restriction or entire prevention of lumbering operations.

*What Foresters Do.*

"In order to handle to the best advantage the area under his charge there is a wide range of work which a forester may be called upon to do. He must be able to identify different kinds of trees and must know the uses to which each can be put and the sites to which they are best adapted. He must be able to map the area and to determine the amount and value of the timber upon it. He must be able to draw up a complete plan for protecting the forest from fire and to carry out the details involved in its execution. He must know how to control the attacks of destructive insects and fungous diseases. He must be able to handle the many details connected with the collection of seed and the production of young trees in forest-tree nurseries. He must know where and how to plant these, or how to sow the seed on areas where this is preferable. He must know whether any given stand is too dense, and if so, what and how many trees should be taken out to stimulate the growth of those that are left. He must be able to determine the rate at which trees are growing and the age at which they should be cut and to make plans for harvesting them in such a way as to secure natural reproduction. And finally, he must be able to draw up a "working plan" providing in detail for the handling of the entire forest in such a way as to keep it continually productive.

"All of this obviously involves a good deal of office work in the formulation of plans, the maintenance of records, and the miscellaneous administrative work connected with any business enterprise. It also involves a good deal of practical out-of-door work. The average forester must take long walks and horseback rides. He must often camp out in a tent or with no shelter whatever. He must take his part in fighting forest fires, which means the liberal and energetic use of the ax, the mattock and the shovel. He must run compass and transit lines and make topographic maps. He must estimate the size and contents of standing trees by the use of calipers and height-measures, and must scale the fallen timber. He must mark, or blaze, the trees to be removed in lumbering and must see that the operations are carried out in accordance with the approved plans. He must collect tree cones, extract the seeds from these, sow them in the nursery, care for the young seedlings and later set them out in the forest.

"He must also do a hundred and one other things which are not strictly forestry but which are so closely connected with it that they must be handled by the forester along with his other work. Grazing is a good example of this, since most of the forest regions in the United States produce forage as well as trees. In order to utilize this to best advantage the forester must know how many stock the range will support and how they should be handled. In regions where mineral deposits occur he must be familiar with the mining laws and must have at least enough knowledge regarding mining to enable him to deal intelligently with prospectors and others. Since most of the forests occur in undeveloped regions he must know how to open these up by building ranger and lookout stations and by constructing such other permanent improvements as roads, bridges, trails and telephone lines. In short, the average forester, particularly in pioneer regions, must be a veritable jack-of-all trades.

*Where Foresters Work.*

"Forestry is primarily an out-of-door occupation. Some indoor work in the formulation of plans, writing of reports, handling of correspondence, and other office routine, is of course necessary, particularly in the case of those charged with the administration of large areas. But the average forester must spend the bulk of his time in the open, in the forests for which he is caring. Sometimes his headquarters may be in a small town or sometimes in a more or less isolated situation in the woods themselves. In either case his daily work will ordinarily take him into the open in sunshine and in rain. Occasionally he may be absent from home for several weeks at a time carrying his bed and provisions on his back, or, if he is fortunate, on a pack animal.

"So far as geographical location is concerned, opportunities for foresters have heretofore been mainly in the mountain regions of the West where the National Forests are located. As forestry comes to be practiced more and more on State Forests and on private lands, however, similar opportunities will develop in the East. There is no reason why large numbers of foresters should not eventually be employed wherever forests occur, and this means practically throughout the country except in the Great Plains and in the farming regions of the Central States and Middle West.

*What Handicaps Are Serious.*

"Generally speaking, a forester must be able-bodied and in good physical health. He must have a strong heart, sound

lungs and a constitution able to stand exposure to all kinds of wind and weather. Heart disease, tuberculosis and other serious organic troubles are handicaps that point to the choice of another occupation.

"On the other hand, there are certain disabilities, and particularly injuries of various sorts, that do not constitute any serious drawback. Injuries to the mouth, nose, ears, scalp and other parts of the head, for example, do not disqualify unless they interfere to a dangerous extent with one's eyesight or hearing. Some deafness is allowable provided it has not gone so far as to prevent communication or to endanger one from falling trees or other accidents. Even blindness in one eye is not a real handicap if the other eye is still sound. The loss of an arm or a leg incapacitates a man for the physical work required of most foresters, but minor injuries to these limbs, such as loss of a finger or a toe, do not disqualify one.

"For certain specialized duties one can have sustained even more serious injuries and still be able to give satisfactory service. One may be badly crippled and yet be successful in research work, provided he is able to move about more or less freely, has some use of his arms, and can handle a microscope. Men at fire-lookout stations need little more than good eyes and sufficient hearing to use a telephone. On the other hand, one would hardly wish to take up fire-lookout work as a permanent occupation, and unless his condition can be improved sufficiently to enable him to resume active physical work his chances for advancement are poor. Special appliances for handling tools are not necessary, as is the case with many industrial workers. The average forester must be able to turn his hand to a wide variety of activities and to use such homely implements as the ax, the hammer, the shovel and the mattock.

"The danger of further injury is no greater in forestry than in most other outdoor occupations. Accidents due to forest fires, bucking horses, falling trees and rolling stones are always possible, but the proportion of those seriously injured in such ways as these is not large. Those employed by the National Government receive compensation in case of injury incurred in line of duty.

### *What Training Is Necessary.*

"Forestry requires the services of three more or less distinct grades of workers—the professional forester, the forest ranger, and the forest guard. The professional forester handles the larger and more technical phases of forest management. He determines what the forest under his charge contains, how much it is worth, how fast it is growing, when and how it should be cut, what kinds of trees should be favored, and other questions of the same kind; and also exercises general supervision over the execution of whatever measures are decided upon. The forest ranger acts as a sort of semi-technical assistant to the professional forester. He does not need so thorough an education as the professional forester but must have sufficient technical knowledge to enable him to carry out intelligently the plans formulated by the latter. His work is to a large extent 'practical' and involves the routine of fire protection and fire fighting, marking the trees to be removed in timber sales, scaling the felled logs, handling planting operations, surveying, building trails, running telephone lines, and doing other work connected with the administration of the forest. The forest guard is ordinarily a non-technical assistant who helps the forest ranger in those aspects of his work which require little or no knowledge of forestry. Forest guards are frequently appointed for short periods only to help the regular force during the busy season, and particularly in the work of fire protection and fire fighting. Previous experience in the woods or in similar occupations such as lumbering and surveying constitutes a valuable, but not essential, preliminary training for foresters of all grades.

"Twenty-five years ago the professional forester was almost unknown in this country and there was not a single educational institution at which he could secure the necessary training. Today the profession is well recognized and there are more than 20 schools offering instruction of a grade similar to that required of civil engineers, doctors, lawyers, ministers and other professional men. As a basis for the more technical phases of his education the man who desires to become a professional forester must have had courses of collegiate grade in botany, geology, organic chemistry, mathematics through trigonometry, plane surveying, mechanical drawing, economics, and either French or German, or preferably both. With these as a foundation he is ready to go ahead with the technical subjects such as dendrology, silvics, silviculture, forest mensuration, forest valuation, forest management and forest regulation. Obviously a comprehensive training of this sort cannot be obtained with less than four years of collegiate work, at least two of which must be devoted almost entirely to professional forestry subjects. If a man has already had a college education, however, he can readily prepare himself for the profession by two years of post-graduate work. The degree of bachelor of science in forestry is usually given on the completion of a four-year professional course, and of master of science in forestry, or master of forestry, on the completion of a five-year professional course or of two years of post-graduate work following four years of regular college work.

"For the forest ranger no such intensive training is necessary. With a high school education as a background, one year of rather elementary training in such subjects as fire protection, surveying, timber estimating and scaling, nursery practice, methods of planting, range management and report writing is sufficient to enable a man to qualify.

"In general, the course covers much the same ground as that taken by the professional forester, but in a much briefer and more elementary way. Those who have already had considerable practical experience along these lines can secure a sufficient foundation for their work in three or four months, although even for such men the longer course is preferable if time to take it can be found. Many of the forest schools of the country now offer courses of this sort and the opportunities for instruction are ample.

"Since forest guards are engaged almost wholly on non-technical work no particular course of training is necessary. No one with any ambition, however, would wish to remain a forest guard indefinitely when other opportunities are open to him merely by taking a free course of instruction. If one wishes to take up forestry, therefore, and is not in a position to take the professional course, he should by all means attempt to qualify as a forest ranger. Should lack of other openings then make it necessary for him to serve as a forest guard for the time being, he would be in a position to take advantage of the first opportunity for advancement.

### *What Opportunities Are Offered.*

"Opportunities for employment for foresters may be classed as fairly good. The point has now been passed where the supply is totally inadequate to meet the demand, but at the same time the war has greatly depleted the ranks of foresters throughout the country, and there is no question that many new men will be needed during the process of reconstruction and afterwards. The National Forests already offer opportunities for the employment of many men and it cannot be doubted that similar opportunities will soon be offered in State forests as well as in the case of forests still in the hands of private owners. With the steady decrease in the timber supply, the Nation will soon be face to face with the necessity of practicing forestry extensively as a national safeguard and unless private owners take upon themselves the task, there is little question but that the Federal and State Governments will take matters largely into their own hands.

"Altogether it is a safe prediction that any one who desires to engage in forestry and who qualifies himself for the work will be able to find employment. The entering salary for forest guards in the national service averages about $900 a year and for forest rangers about $1,100 a year. Technically trained foresters ordinarily enter at approximately the same salary as forest rangers, $1,100 or $1,200 a year, but with greater opportunities for advancement later. In State and private work approximately the same entering salaries may be expected although some private owners may be unwilling to pay quite so much to forest guards and forest rangers at the start.

### *What Are The Chances For Promotion.*

"Chances for limited promotion are reasonably good. It should be recognized frankly, however, that one can not hope to get rich in the profession and that a comfortable living is all that can ordinarily be looked forward to. In exceptional cases unusually able and well qualified men will doubtless be able to draw salaries of $4,000 and $5,000 a year. The average professional forester, however, can hardly hope to advance much beyond $2,500 or $3,500 a year except by acquiring an interest in some lumber business or in the forest itself. For the forest ranger a salary of $1,500 or $1,600 may reasonably be looked forward to. Moreover, this salary often carries with it a ranger station which can be occupied as long as he stays in the service, and also an opportunity to produce some crops for his own use. Forest guards can hardly hope for more than $900 or $1,000 a year.

"In other words, in forestry, as in all other professions, the better educated you are the better are your chances for promotion. Even at best, however, the chances for large salaries are small and those who are bent on getting rich should look elsewhere for an opportunity to do so. On the other hand, one who is satisfied to make a comfortable living, to spend a large part of his life in the open, to occupy a responsible and respected place in his home community, and to enjoy the satisfaction which comes from having an important share in a work of great public service, cannot look for a more congenial or attractive occupation than forestry."

# LETTER FROM CHAPLAIN WILLIAMS OF THE FORESTRY UNITS

MR. P. S. RIDSDALE, Treasurer of the Welfare Fund for Lumbermen and Foresters in War Service, has received a very interesting letter and report from Chaplain Howard Y. Williams, formerly of the Tenth Engineers (Forest). Chaplain Williams has recently been designated Senior Chaplain of the Forestry Units, with headquarters at Tours. In writing to Mr. Ridsdale, he said: "Your Fund has been a blessing." His letter and report are both reproduced here because they are full of interest, despite the cessation of hostilities.

DIVISION OF FORESTRY
OFFICE OF THE SENIOR CHAPLAIN
A. P. O. 717, FRANCE
November 27, 1918.

DEAR FRIENDS:

Have just come back to Tours after a two weeks' trip of inspection and unlike so many previous times, now that the censorship is reduced I can tell you all about it. Among the 30,000 soldiers that I am father for, we have had a large number with the First and Second Armies at the front. With the armistice on and the changes resulting I had to go over our field there to reassign chaplains, etc. I left for Paris the second day after the armistice was signed and so got in for a half day of their celebration. Unless you have been here for a year, like I have, you cannot imagine the change that has taken place in the appearance and spirit of the people. It is wonderful, the new sunshine that has shed itself everywhere. Even the cities themselves show the change, with their flags, arches, etc., but most of all the lights on the streets in the evenings. I have stumbled all over myself and others in the streets of Paris on the dark nights that have passed, but never again. The whole place is ablaze, and all the other cities and towns have followed suit. Parades were everywhere, but the funniest of all were those French girls who would march down the streets, a number of them arm in arm. Spying some Americans they would circle around them and repeat, "Do your duty!" "Do your duty!" This meant that we must kiss them all. Well, that was some celebration.

The next day found me at Chaumont, where we have our General Headquarters, and where a branch of my section is located. After a day there of consultation and plans I was on my way in a big Sunbeam auto and with a good chauffeur to the stamping grounds of the two armies. All the way along the road were thousands of troops marching to and from the old battle front. Many were coming back for rest, but other regiments of infantry, cavalry, and artillery were on their way to Germany. The roads were thick with the battle-scarred French on their way to Metz. As you can well imagine the expression of the faces were very different from those I have seen when men were marching to the trenches. Another sight pitiful and yet joyful was the hundreds of prisoners returning from Germany. As you know they were just free and had to shift for themselves. They wore everything imaginable, and carrying all sorts of boxes and packs they made a strange sight meandering along singly sometimes, and then by twos and threes, and crowds. They were directed to great stockades, once used for German prisoners. There every man had to take a bath and go through the louse exterminator. Afterwards they were fitted out by the American Quartermaster with what was lacking in their needs, and then they jogged on their way again, until finally they should hit the railroad. They were now even an odder looking sight for old French, British, and German uniforms were added to by American. A man would have an American hat and blanket topping off an old French uniform, or perhaps instead of the hat khaki breeches used between French blue leggings and a French coat. It was some sight, but they were happy and that was sufficient. Most of the Americans had only been there a short time and it had been a lark to them. After the first few months few Americans had been taken. The men had fought until the last, and never gave in.

Thus I went through Toul, over to Nancy, then by the remains of St. Mihiel, Verdun, etc. I visited my men still living in their dug-outs in what was once No Man's Land. I had taken some phonographs along and new records from friends in the States. It did seem odd to hear the music being played when outside all was torn to pieces, woods were shattered, only stumps remaining, barb wire stretches everywhere until one would think there had never been so much in all the world. We have had several groups of engineers working in the Argonne Forest, where the Americans did their best and hardest fighting. It almost seemed sacred ground when I thought of the price that had been paid to gain it. Where before the shells flew and raged, now all was quiet. Our companies are all through and right up to the Hindenburg line and beyond to where the last days found us. We leisurely strolled through German trenches which they had thought were secure forever. Made of concrete, the officers had pool tables, baths, and then chicken and rabbit coops for the means of dainty needs. How we fooled them. When one sees the damage that German shells did to us, he wonders how more could be done, but when one goes over that Hindenburg line and on to see what we did to them he sees that more. The land in these quiet days looks as though tornadoes and earthquakes had tossed and rocked her to the utmost. Towns have not a wall left standing. Trees are cut and stand only in shreds. Here and there are those machine gun nests which took such deadly toll. You hardly notice them as they lie covered under little mounds of grass, but careful observation reveals the slit in the concrete through which they pour their deadly hail. One near St. Mihiel was the worst I have seen. It was at a cross-corner and covered three roads. It looked like an innocent mound decorating the street corner, but a close-up view showed the opening which covered the surrounding country. We leisurely visited the trenches and picked up enough souvenirs to start a small war of our own, guns, shells, German helmets, pieces of barb wire, etc.. Will have plenty to show you when I return.

Many are the friends that I have renewed acquaintance with again on this trip. My heart always beat a little faster when I ran across men from my old regiment, the Tenth Engineers, who have been promoted and commissioned and are doing work with other units. I sort of feel as though we were brothers. Then I saw Croyle and Davis of my days at Union, and Heinzman of the days at Iowa. So it was wherever I went, I ran into some of the friends of by-gone days. Then on Sunday last I arranged to spend the day with one of my old companies. I had three meetings and it was some re-union. My regiment is going back sometime in late December. How I should like to go with them. I telegraphed to G. H. of my desires but also of my willingness to remain if they thought it for the best interests of these engineers who look to me as their senior chaplain. The word came back, "You should remain," and so for two or three months or longer I shall continue on the job here. I now have sixteen chaplains assisting me, but expect to have twenty-five soon. The men who are going home are of course delighted, and the men who must stay are down-cast. Of course we would all like to come home, but there is work still to be done here, and as I am well acquainted with the field I am ready to stay and do my best, always looking, however, for the day when I shall be off for Hoboken and home.

Thanksgiving has passed and Christmas will soon be here. Surely we had more to be thankful for than we dreamed even a month before. We are proud of you at home and the splendid way in which you have backed us up. Am sure that you have found joy in service well done, even as we here have done. My heartiest wishes for the Merriest Christmas and a New Year resplendent in opportunities of service in the spirit of Christ, our Saviour.

Faithfully your friend,

HOWARD Y. WILLIAMS, Senior Chaplain, U. S. A.

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To keep up our pep it has been my purpose to publish once a month such a news sheet as the following. Our immediate departure makes our first effort the last. G. H. has asked me to remain here in my capacity as Senior Chaplain for Forestry Units, and so I shall not be with you on the return trip, much as I should like to be. In spirit I shall be with you.

May our Heavenly Father bless you all richly as you go back to civil life. I shall hope to see you all in later days, and shall always be glad to hear from you at 3326 Oakland Avenue, Minneapolis, Minnesota. Just remember that I am ready at any time to marry you to that "best girl in the U. S. A."

I shall always count my experiences with you as very precious. Good-bye! God-speed!

HOWARD Y. WILLIAMS, Senior Chaplain, Forestry Units.

# OLD 10TH ENGINEERS HOBOKEN SHEET

**Headquarters Detachment of the Old 10th Engineers, Tours.**

Captain F. C. Barlow is in charge of a detachment of men constructing a mill at La Chaise Dieu.

C. J. Clifford and Donald R. Broxon have been commissioned second lieutenants. They are with cordwood operations at Chaumont.

Regimental Supply Sergeant Wm. H. Icenogle has been commissioned and is in the Section Forestry Office at Bordeaux.

James A. White, our former regimental supply sergeant, is now a second lieutenant in the Forestry Section at Gievres.

Chaplain Howard Y. Williams is designated Senior Chaplain of Forestry Units with headquarters at Tours. He now has fifteen chaplains assisting him.

Former Regimental Sergeant-Major Henry T. Miller is now the regimental sergeant-major for the Casual Detachment at Blois.

Second Lieutenant George Walker is in charge of convoying trains. His headquarters is in Gievres.

Guy C. Hendrickson, regimental sergeant-major, has received his commission. Ed. Badertscher is regimental sergeant-major in the new organization.

Sergeant Mark A. Scharp has been employed for several months in the office of the American Delegate, C. I. B. G., Paris.

Byron DeYoung, former chauffeur for Colonel Woodruff, has been promoted to the grade of sergeant in the 20th Engineers. He is now driving for Major-General Harbord, the present Commanding General of the S. O. S.

Cook Ed Redford has charge of the Depot Engineer officers' mess at Gievres.

Alfred C. Christeson was promoted to the grade of color sergeant. He is attached to the D. C. and F.

Glen D. Watkins and Jimmie Carron are keeping an eagle eye on the mail directed to the men of the old 10th Engineers. If you are called away on detached service, drop the boys a line and they will do their best to insure you rapid mail service. Watkins has been promoted to wagoner, and Carron has been promoted to sergeant.

Tom Morrison was recently transferred from the first battalion and is now with the D. C. and F., at Tours.

**Headquarters, First Battalion, 10th Engineers, Pontenx (Landes).**

In the first place we are all very much cast down over our loss of Captain Condon, one of the best adjutants our District ever boasted, and believe me the section that gets him will have our envy. Since Major (now Lieutenant-Colonel) Benedict's departure one doesn't know what to expect next.

Our Sergeants, Billingslea, Kellogg, O'Malley, Calloway, Cook, Hughes, Henry, Corse and Berge, of old Co. C, Co. D, Co. A, 41st Engineers, and 503rd Engineers, respectively, are now nine very dignified shave tails of the 32nd, 33rd, 34th, 41st and 4th Engineer Service Co., 20th Engineers. They are hitting the ball in great fashion too, and have all the men behind them.

Our fine old Paymaster Clayton B. Griswold, Co. D, died recently of pneumonia, and his passing is one of the first of a series of deaths resulting from the "flu." Sergeants Pierce and Warren, of the 32nd Co. Det. are the latest, and we hope, the last cases.

It has been rumored that Sergeant-Major Ryerson, who recently took his examination for a commission, has wavered somewhat in his determination to support the gold bars. The way they treat those second looies at Tours, he says, is "simply scandalous," and maybe he'd better keep his present position where he at least can make all the officers in the district toe the mark for officers' call once a week. If a sergeant-major doesn't command respect, who does?

Sergeant Thomas F. Mahon (Mange—alias Scurvy) has been appointed cop at a nearby junction. He's our only Irish cop, but amply makes up for the lack of his brethren on the police force. Recently he saved the appearance of an outspoken but small Navy man who visited the district. This little tar saw a big darkey coming back from leave and said: "Gee, look at that big coon over there!" Sambo turned around and said: "Look out, Boss, you'se ovah heah now—don't call me no coon." Mange stopped difficulties by stepping up and saying: "Now, lads, no fussing on my beat."

We had a big wreck on the beach nearby. A large vessel carrying Oporto and Malaga wine was torpedoed just opposite headquarters of the 4th Battalion and several thousand barrels of liquid joy came ashore. It's all gone now, but while it lasted—"Golly how they did enjoy it." Some claim it was Hun propaganda. Be that as it may, it caused a lot of gaiety to the French and Americans of this section, and is giving several hundred lawyers a living once more.

The Hot Springs Special at Bourricos is complaining of a diminished attendance since the Summary Courts have been stricter. Sergeant Bugler Schillemoore is also kicking because the patronage at his hotel is "very transient now-a-days."

Co. C, now 34th Co., broke the production record last month by knocking off a hundred thousand feet in 20 hours, which is going some, considering the average size of the logs were not over twelve inches.

Hope you can glean a little news from this mess. Best of luck to you on your news sheet. We have all wanted something like that for a long time, but have not had a progressive leader to start it. It will be the only identity of the old 10th now.

If I can be of service in the future—let me know—parceque je le fera avec tous mon coeur.

**Headquarters, 2nd Battalion, 10th Engineers, Besancon (Doubs).**

Private Glen D. Watkins, lately of 3rd Detachment fame, was sent to Tours to assume complete charge of the mails and to investigate the cause of non-receipt of mail from the States by these headquarters. Evidently he has been successful as we have received no mail since.

Marion William Belknap, self-styled second-story-man, is now posing in the most prominent photograph shop in this district as "AMERICA'S ANSWER TO THE HUN." The girls want to know when he became a soldier.

The 37th Co. (formerly F Co.), in honor of their big cut, 93,000 in ten hours, gave a banquet, but the headquarters detachment was forced to decline the invitation which, by the way, was not given, in view of the fact that napkins were not available.

Taken out of a laboring battalion, given a berth in a real engineering outfit, and soon after promoted to the rank of corporal; such is the history which reads more like fiction, of the army life of erstwhile Private, First-Class, Roy C. Dougherty (good pay, travel and promotion).

Our representative from the East-Side, Sergeant Thomas Jeremiah O'Connor, the boy with the typewriter neck because it is underwood, is a valuable acquisition to our District Y. M. C. A.

Private Schaner, of heavy work fame, straight from the farm to the lure of the bright light way, is being used as the detachment decoy.

Steeplejack Nick Oliver, is too well known to need introduction. Suffice it to be said that in his illustrious person we boast of one of the best stationary engineers in all respects that has ever ornamented a chair with his person. (See Service Record.)

It is reported that our erstwhile Battalion Sergeant Noel A. Dew, has been transferred to the Camouflage Corps. Very appropriate.

Sergeant Edward L. Ludwig, well known architect from Minneapolis, late of the 43rd Engineers (road builders), is a valuable acquisition to this office. Summing up all of his various talents, he is one of the best eaters that we have ever met.

Johnny Rule, a young but brilliant traveling auditor, better known as "Handsome" by the smart set; who once wrote to his home paper in SISSON (where have I heard that name bofore) that he would stand by OLD GLORY to the last, has just been classified as "Z-4" as a result of shell shock. Who threw the peanut?

Leo A. Millett, who "Thinks he should have joined the infantry," is at present engaged in chasing wagons up and down the P. L. M. in search of one.

Wanted: A man to act as model for fitting of Sam Browne belts, boots and spurs (to keep their feet from slipping off desks) for newly created officers.

Murrell C. Warren, better known to the elite of this community as "Nancy LaTour," has just recovered from an attack of heart failure.

One of our soldiers recently passing through Tours from the front reports grand concerts at headquarters. Who invented work?

It is with deep and genuine regret that we have to report the loss of one enlisted man, Battalion Sergeant-Major Walter Charles Lowdermilk. It is indeed more than a pleasure, it is our duty, to salute Lieutenant Walter Charles Lowdermilk.

Comply with requests from headquarters, and let your folks at home know all about your doings. Use field service post cards and save paper.

Battalion Supply Sergeant Lloyd Phillip Emerick, B. S. S., reiterates that he is an American citizen, even though a native son. Long live California!

Erstwhile Private Premier Class Viscount Edmund Francis DeBaroncelli, until a few days ago our only corporal, has decided to become an American citizen, and has filed naturalization papers. We knew he would get right.

**3rd Detachment, 10th Engineers, Sore (Landes).**

Our camp during the past three weeks has been hard hit by the malady known as "Spanish Flu," otherwise "Spanish Influenza," and it is with sorrow that I have to report the death of two of our boys. Corporal Clyde A. Warren died on October 23rd, and Sergeant James A. Pierce died on October 29th, diagnosis in each case being pneumonia brought on by the "Flu." Both of our departed comrades were original members of the Co. "A" since the regiment was organized at Washington, D. C., and their loss is keenly felt by all.

Our Acting Top Sergeant, Gerald D. Cook, better known as "Jerry" Cook, is now wearing a gold bar on his shoulder, having been recently commissioned a second lieutenant, and all the boys wish him the best of luck now that he is "among the commission." We all feel that we have three of the best officers in the whole regiment now in Lieutenants R. T. Allen, C. W. Chittenden and G. D. Cook, and are willing to go upon record as having said so.

Supply Sergeant Paul E. Coller is now on the job as "Acting Top," and is handling it like a veteran.

The following promotions have recently been made in the Detachment:

Emery L. DeRushia, sergeant from private; Ralph Elder, sergeant from corporal; Glen S. Harding, sergeant from corporal; Loren H. Balbraith, corporal from private, Thomas F. Johnson, corporal from private; Joseph A. Lanum, wagoner from private; Harry R. Suita, wagoner from private; Ralph E. Bacon, cook from private; Roger W. Billings, cook from private.

The Detachment as a whole would like to take this opportunity to thank Lieutenant Weiss, Medical Corps, U. S. Army, for his untiring efforts, both day and night, in ridding this camp of its epidemic of "Spanish Flu." We feel certain that if it was not for Lieutenant Weiss' constant attention to those of us that fell victim to this disease our losses would have been far more severe than they were.

**Co. B, 10th Engineers, Pontenx (Landes).**

Sergeant C. B. Griswold, Co. B, 10th Engineers, but lately with Disbursing Officer, Q. M. C., at Bordeaux, died after a short illness at Base Hospital No. 6 from pneumonia.

Griswold left the states with Headquarters Co. as a private, but was assigned to Co. B, shortly after arriving in France. Through his untiring efforts and experience along clerical lines he was made supply sergeant, and at the same time was put in charge of all the clerical work connected with the company. When the company was divided into three camps, he still retained his old duties, but on top of this was made Acting Top. For sometime he was on detached service for one week out of each month with the Disbursing Officer. Three weeks before his death he was on detached service awaiting his transfer to the Q. M. C., and it was at this time that the end came. He died October 22nd, leaving a wife, mother and father, beside a great number of friends in the 1st Battalion to mourn his death. This was the first and only death in the company snice it was organized.

In anticipation of winter, the tents at Aureilhan Camp have been replaced by slab houses. A new barber shop has been built recently, and a shower bath and laundry are now being constructed.

Corporal Ernest C. Peachey is on detached service with Captain E. C. Barlow, erecting small mills in Northern France.

Corporal Erwin C. Hyde is also on detached service. He is erecting a stationary steam engine at Abainville (Meuse).

Private George O. Stewart received his commission as second lieutenant October 23rd. Lieutenant Stewart, previous to obtaining his commission, was surveying and estimating timber under Captain Berry.

Private Grover H. Lazarus has returned from the hospital at Pontenx where he has been confined for several weeks as a result of an accident at the mill.

Private Thomas Lommasson is on detached service with the 17th Engineering Detachment at Camp Gron, St. Sulpice. He is engaged in dock construction work.

Corporal Kelly O. Reynolds is on detached service with Major Benedict, the Section Forestry Officer.

Captain Inman F. Eldredge is now adjutant for the 11th Battalion, 20th Engineers. Lieutenant R. T. Allen succeeds Captain Eldredge as Commander of the 33rd Company.

Second Lieutenant Edgar Myers has recently been commissioned, after completing the course at the Saumur Artillery School.

Lieutenant Sanford, who has been in command of Courant Camp, has been transferred and is now captain of a Sapper Company in the States.

Sergeant J. V. C. Williams formerly of B Co., 10th Engineers, is now with the Tank Corps, First Tank Center.

Sergeant George A. Callaway was commissioned second lieutenant, October 8th, and is assigned for duty at Aureilhan Camp.

Sergeant Robert S. Henry succeeds Lieutenant Callaway as Sergeant in charge of the mill operations at Aureilhan.

Lieutenant Charles T. Kraebel, formerly sergeant in Co. B, later with "The Stars and Stripes," is now with Captain Swift Berry on reconnaissance work.

Lieutenant W. F. Ramsdell formerly sergeant with Co. B, is at present stationed at Headquarters, 2nd Dist. Depot Division, 1st Corps.

Sergeant Glenn C. Fullenwider, who has had charge of part of the woods operations at Courant River Camp, left for Haute Marne on November 5th. He is now a student in the Engineer Officers' Training School.

Courant River Camp is now operating a steam skidder to skid logs from the wood to the river.

Owing to the extremely low water in the river we have experienced a good deal of difficulty in logging the Aureilhan mill. Conditions have improved somewhat with the recent rains.

The following promotions were made in the company November 7, 1918:

Huge V. Badertscher, from sergeant to first sergeant; Oliver M. Savre, from corporal to sergeant; Fred M. Reed, from wagoner to sergeant; Carl W. Labhart, from private first-class to sergeant; Samuel A. Brasher, from lance corporal to corporal; Chas. W. Cook, from private first-class to corporal; Ray O. Pattison, from private first-class to corporal; Mathias B. Stonestreet, from private first-class to corporal; Robert K. McClelland, from private to corporal.

**Co. C, 10th Engineers, Pontenx (Landes).**

We received the news yesterday that the Armistice had been signed and of course the French people here just went wild, the same as every other place in France. They burned the Kaiser in effigy in Pontenx and had a big lantern parade. The thing that makes me sore is that they did not allow the mills to shut down and give the men a chance to celebate. One of our men stole the big nut off of the saw mandrel, and we had to shut down until we found it. It certainly was a kid trick, but it gave the night crew time to celebrate.

We broke all records last month, and also won the cut in September. We cut 99,050 feet one day last month, and nearly 1,800,000 feet for the month. The spirit has been better in the last three months than I have ever seen it. The men have certainly done great work. They are tackling everything as though they were playing a long game of football. There is a great deal of rivalry between the woods crew and the mill crew, and also between one outfit and the other mills.

**1st Detachment, 10th Engineers, Donzy (Nievre).**

At the end of August, the 1st Detachment completed the Mortumier Operation near Gien, in so far as available saw logs were concerned, and moved overland, a distance of some 80 kilometres, to the new operation near Ciez-Couloutre. The dismantling of the mill, moving of camp, mill and equipment overland and the setting up of the new camp and mill at Ciez-Couloutre was accomplished in one week—which was pretty quick work. The new operation consists entirely of oak, running to fairly good sized stock, with large quantities of coppice, now being cut by quartermaster and artillery troops.

Captain Benedict left this station the latter part of September to assume command of old Co. D of the 10th, and First Lieutenant T. H. Hughes of the 13th Co., 20th Engineers was assigned as Commanding Officer. Lieutenant Hughes has since been appointed captain.

Second Lieutenant W. R. Brown has been appointed first lieutenant and is still in charge of the mill and shipping end of this operation.

Wagoners Frank H. McAleer, Reuben P. Miller, George M. Isinger and Sergeant Michael E. Borheady were transferred to the Motor Transport Corps as motor drivers the latter part of August and we have since heard that they were driving trucks in the midst of the "Big Push" at St. Mihiel. McAleer returned on a short leave and told some very interesting tales of his experiences at and near the front.

Corporal Fred H. Miller has been transferred to the Army Candidates School.

The following is a list of recent promotions in the 1st Detachment:

Earl Weaver has been appointed sergeant. Edd Harrison has been appointed corporal. The following were appointed wagoners: Thomas A. Clark, James W. Yates, Leroy T. Rickey, Carl E. Speaks.

**Co. E, 10th Engineers, St. Julien (Cote d'Or).**
**Promotions**

Lieutenant Haworth from second to first lieutenant.

Lieutenant Herrick, from second to first lieutenant.

Sergeant Grant attended training school and received a commission as second lieutenant in the engineers.


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**THOMAS J. LANE**

TREE SEEDSMAN

**Dresher Pennsylvania**

Broxon has been made a second lieutenant in the fuelwood work.

Sergeant Jones is now first sergeant.

The following are our new sergeants: Manning, Hawke, Bradfield, McClosky, Balsinger and Bert Reed.

Backus (known as Goldie), one time cook, is now a corporal in charge of the railroad construction.

In October I understood that our operation set a record cut in hardwood, 20 M' mill class, for France.

We have a fine camp here, also the beginning of a band.

**Co. F, 10th Engineers, Levier (Doubs)**

The 37th Co. formerly Co. F, established a new record for mills of the Forestry Regiments on October 30, 1918, by cutting 163,000 board feet of lumber in two ten-hour shifts. The mill has a rated capacity for two shifts of only 40,000 board feet.

The newest thing in non-coms are Sergeants Alexander, Muzzall and John J. Poitevin, and Corporals Rene H. Meroux and James O. Hutchings.

Private Ward G. Rush returned to familiar scenes October 29th after having spent eleven months in various hospitals in France receiving treatment for ear trouble. He was as glad to return as we were to see him.

Captain Fred Morrison treated the men of his command to a most sumptuous feed on Sunday, November 3rd, in celebration of the record cut made by the sawmill recently. Uncle Sam will have to go some Thanksgiving Day to equal it in variety, quantity and appreciation.

An item of unsual interest occured November 2nd—some first-class mail arrived.

It seems that Turkey knew she couldn't last longer than Thanksgiving Day, so she capitulated while the capitulating was good.

Master Engineer, Senior Grade, Parrish and Sergeant, First-Class, Adams are wearing Sam Brownes, having received commissions in the Engineer Corps recently. We bucks are all glad to salute them.

Lieutenant Adams received his commission while in the Camp Infirmary with the mumps. Don't tell the rank and file he wasn't "swelled up" over it. Well, it's the kind of inflation that isn't permanent.

First Lieutenant Yandell Y. Miller has been assigned to this command as Camp Surgeon. We have learned to know and like him.—The regulation O. D. Pills never were better.

We are glad to see Major McKay again. He returned recently from A. P. O. 714 where he was attending the Sanitary School.

Ex-Corporal Charles M. Rose, Chef de Gare of D'Yoche, has been appointed a sergeant.

**No Reports Received From Companies A and D**

## TRAGEDY OF FRENCH TREES

BROKEN homes, ruined factories, shattered churches, violated graves, it had seemed to me we had rung all the changes on the destruction of war. But there remained one—the tragedy of the trees—says a writer in McClure's Magazine. You can rebuild houses, churches, towns even—for that takes only money. But you can't rebuild orchards of fruit trees and avenues of great shade trees—for that takes time. We were seeing them everywhere now—orchards with trees that were but faded, shriveled branches of brown leaves lying on their sides; orchards, where these had been cleared away that showed nothing but white-topped stumps. They say that when the warm spring came, some of these orchard trees, lying on their sides but not wholly severed, leafed gently and then—just before they died—bloomed once again for France.

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## WOODEN SHIPS

RETIRING from his post as manager of the Federal Shipping Board's wooden ship division, Mr. James O. Heyworth declared that the construction of these vessels has been justified by the valuable service they have rendered "in both coastwise and transoceanic runs." Of one hundred and one wooden ships completed and delivered to the Shipping Board up to December 1st, last, he reports ninety-four now in active service. Eighty-five of these, according to the records now in hand, "have made in all 305 voyages, covering a total of 490,422 statute miles." Wooden ships brought last year's Hawaiian sugar crop to the States. They plied from San Francisco to Manila, from Pacific coast ports "to Africa and Antofagasta, Chile; from Antofagasta to gulf and Atlantic ports; from gulf ports to Atlantic ports," and thence "to Halifax, Bermuda and the Virgin Islands." They carried canned goods, cement, nitrates, coal, sulphur, general cargo, "serving their purpose by releasing from essential trades," in waters outside the war zones, "vessels that could meet the requirements war zone conditions imposed."

Admitting that the "hopes of the proponents of wooden ships as to speed of construction were overly sanguine," Mr. Heyworth says, nevertheless, that, "measured by performance, the entire wood shipbuilding program has shown an efficiency of over seventy-two per cent," which compares very favorably, to put it in the mildest terms possible with the efficiency shown by, for instance, the "fabricated shipbuilding program." And he expresses the belief that the wooden ships will continue in peace time "to serve a useful and profitable purpose." Their carrying capacity and steaming radius may be increased, he suggests, by the use of fuel oil instead of coal. "Such opposition as has arisen among operators to the wood ship is based," he explains, "not so much upon the material of which it is constructed as it is upon its size and consequently small carrying capacity." The fuel oil suggestion is evidently presented to meet that objection.

## WILLOW FOR ARTIFICIAL LIMBS

THE Forest Products Laboratory at Madison, Wisconsin, is working on the drying of willow for artificial limbs. There is a shortage of material and the demand for artificial limbs will increase. It takes from three to five years to air-season the stock, but indications are that it can be done in kilns in from 60 to 70 days.

**PLANT MEMORIAL TREES FOR OUR SOLDIERS AND SAILORS**

# CANADIAN DEPARTMENT

BY ELLWOOD WILSON

PRESIDENT, CANADIAN SOCIETY OF FOREST ENGINEERS

DURING the month of December Messrs. Clyde Leavitt, Robson Black and Ellwood Wilson, went to Halifax, Nova Scotia, to attend a conference of prominent lumberman and the Hon. O. T. Daniels, Attorney-General and Minister of Lands, to try and get a forest service established in that Province. Nova Scotia is now the only Province without such a service, forest lands in the prairie provinces being administered by the Dominion Forest Service. While Nova Scotia has very little left of her Crown Lands, the lumber industry is a very important one and it was felt that the time had arrived to give more intelligent care to her timberlands. The conference lasted nearly all day and the Premier took part for a few minutes. The Minister listened to all that the advocates of a forest service had to say, but decided that the time was not yet ripe for such a step in view of the fact that the Province has practically no revenue from its Crown Lands and the Minister feared that if such a step were taken the expense might increase from year to year. He was willing to take the step if some means of financing it could be found and an effort will be made to get the timberland owners of the Province to subscribe sufficient money to engage a Provincial Forester. Nova Scotia has had a pretty good forest fire record until the past season when the fires were bad and a good deal of timber and some property was destroyed.

Mr. Leon A. Nix, a graduate of Syracuse Forestry School, and recently with the Chemical Division of the United States Army, at Baltimore, has been made assistant to Mr. Galarneau, Forester for the St. Maurice Paper Company, with headquarters at Three Rivers, Quebec. Mr. Galarneau will begin his work with a map and estimate of the timber lands of the company.

The annual Forestry Conference under the joint auspices of the Canadian Forestry Association, Co-operative Forest Protective Association of Quebec and the Woodlands Section of the Canadian Pulp and Paper Association, was held in the Windsor Hotel, Montreal, on the 29th and 30th of January. This is the blue ribbon forestry event of the year in Canada and was attended by practically all of the pulp and paper and lumbermen of Eastern Canada. The subjects discussed were all thoroughly practical. Colonel Graves of the United States Forest Service, Brigadier-General J. B. White, D. S. O., commanding the Canadian Forestry Corps, and Mr. E. C. Hirst who did such good work with the New England Lumbermen's Unit in Scotland told how lumbermen helped to win the war. There was a very interesting discussion on the necessity for slash burning to reduce the number of forest fires and to help prevent insect ravages. A full discussion by experts of the use of flying boats or aeroplanes in forest fire patrol and forest mapping and reconnaissance illustrated by moving pictures and lantern slides. The use of light tractors in logging operations was considered and an actual demonstration was given. The committee of the Woodlands Section on possible improvements in logging operations brought out much discussion of interest, and the meeting was a very live one.

The staff of the Duck Mountain Forest Reserve, of the Dominion Forest Service, have sent out a very attractive calender showing, by photographs of trail cutting, brush disposal and railroad logging, the activities of the District.

The Minister of Lands and Forests of Quebec will introduce at the next session of the Legislature a bill which it is hoped will help to put the present excellent forest fire protection system on an even better basis.

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Mr. G. C. Piche, Chief Forester of Quebec, has gone to France on personal business. It is rumored that he will try and bring back some large contracts for timber.

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Mr. R. H. Campbell, Director, Dominion Forest Service, has now quite recovered from his serious accident of last summer and is back at work again, much to the satisfaction of his numerous friends.

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The "Alberta Inspection News Letter No. 7," for 31st December is out and is of much interest and full of news of the men of the District and those of the force who went overseas. This letter is gotten out by Mr. E. H. Finlayson, in the interests of his District and is very creditable indeed. We hope it will be continued for the future. Most of the staff have been suffering from influenza and he says "The past few weeks have just "Flu" by. "One of the rangers has been having a good deal of trouble with the Indians writing all over his fire signs, so recently he sent one of these to the Indian Department at Ottawa for translation and found that

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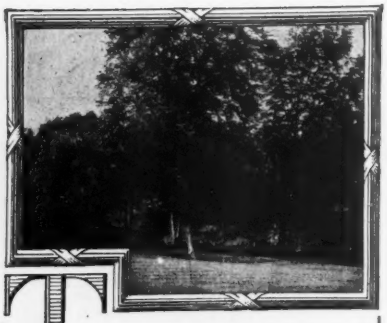

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---

The fire season in Alberta has been satisfactory and little damage is reported. Mr. MacDonald, who went overseas from this District, wrote that after falling 15,000 feet in his aeroplane he was a prisoner in Germany and wanted some books sent over so that he could while away the time and improve his technical knowledge. He marked it "Censor-Please rush" evidently having a hunch that the war might soon be over. The Nursery work on the Cypress Hills during the past season was rather unsuccessful owing to much frost and drought. Fourteen men are expected back soon from the front which will enable the staff to resume its old time activities with renewed vigor.

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Major W. N. Millar, who went over with the Tenth Engineers, has returned to the University of Toronto to take up his teaching again. He is reported as saying that he thinks that if some military discipline and methods could be put into forestry work and lumbering that it would be a very good thing. He says that whereas ten hours extra work for having a button on one's jacket undone may seem harsh, he feels that such attention to details makes for a better job, and that if all the little things are in order and well looked after, the job as a whole must be a better one.

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Prof. R. B. Miller, of the University of New Brunswick, is taking a course at the Yale Forest School this winter and his place is being taken by Mr. L. S. Webb.

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The Laurentide and Riordon Paper Companies have co-operated in buying 1,500,000 spruce trees to plant the coming spring, in addition to those from their nurseries. They will each plant about one million trees.

---

Copies of "'Espana Forestal" which were held back by the war for the past year have just been received, together with the bulletins of the Spanish Forestry Association. These are very interesting and thoroughly up-to-date giving reviews of the forestry publications in many countries, including American Forestry. There is an interesting article about a forestry meeting held in Spain in 1805, another on forest fires in Teneriffe, one on insect pests, and many others well worth mentioning did time permit. The get up and illustrations are excellent, reminding one of the American Forestry Magazine. It is very interesting to see the different view point of the Spanish Foresters, which leans much more toward the esthetic side, so that we have articles on the beauty of the forest and of famous trees and some very good poems together with scientific and technical articles.

---

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# BOOK REVIEWS

Mrs. Allen's Cook Book, by Ida C. Bailey Allen. Small, Maynard & Company, Boston. Price, $2. In commenting on this volume, just off the press, Lewis B. Allyn, Food Editor of the McClure Publications, well says: "The chemical composition of the body requires foods of similar composition. The author of this book in a delightfully simple manner has presented the problem so that, generally speaking, the body may extract from the foods the maximum amount of building and fuel material with the least expenditure of dynamic energy.

"The housewife who studies these chapters cannot fail to find suggestions adaptable, economical and hygienic.

"Mrs. Allen has expressed in popular terms a simple, workable outline of food combination, well adapted to the needs of the housewife. If her book is carefully followed, the dietary of the average family will be much improved, cost decreased and a general gain in health experienced."

Trees, Stars and Birds—A book of outdoor science, by Edward Lincoln Moseley, head of the science department, State Normal College of Northwestern Ohio. Illustrated. Price, $1.40. Published by World Book Company, Yonkers-on-Hudson, New York.

The innate desire of the child to know about nature out-of-doors carries educational possibilities that cannot be ignored. But nature study as such is still new in the schools and courses and methods have hitherto not been well defined. Everything has been left to the already busy teacher, including choice of subject matter, presentation and conduct of field work. The lack of a suitable textbook has been a serious handicap. To overcome this was the purpose of Professor E. L. Moseley in preparing this new nature study book.

Trees, Stars and Birds covers three phases of nature study that have a perennial interest, and it contains material that will make the benefit of the author's long and successful experience available to younger teachers.

The author is one of the most successful teachers of out-door science in this country. He believes in field excursions, and his text is designed to help teachers and pupils in the inquiries that they will make for themselves. Approximately equal sections are devoted to the three phases of the subject. The topics dealt with are those of most general interest.

The text is well adapted for use in junior high schools, though the presentation is simple enough for pupils in the sixth grade. The book can also be used to advantage by such organizations as the Campfire Girls and the Woodcraft League.

### CATALOGUES RECEIVED

The beautifully illustrated 1919 edition of the catalogue of Richard Diener Company—gladioli specialists—of Kentfield, California, has just come in.

A booklet—"The Gladiolus Beautiful"—has been put out by Howard M. Gillet, of Lebanon Springs, New York, with full price list for bulbs.

"Burbank's 1919"—a catalogue of fruits, flowers and various economic plants has come in from Burbank's Experiment Farms, Santa Rosa, California.

The Southern Pine Association of New Orleans, Louisiana, is publishing a series of booklets, artistic, extremely practical and well illustrated, noticeable among which is one called "Beauty Plus Service in Floors."

"The Modern Gladiolus" with full descriptions and price lists, issued by George S. Woodruff, of Independence, Iowa.

THE Augusta, Georgia, Chronicle makes note of the sale of the nursery and landscape business of the P. J. Berckman's Company, Fruitland Nurseries, Augusta, Georgia, to Mr. Sigmund Tarnok.

### NATIONAL LUMBER CONGRESS

A NATIONAL Lumber Congress which is to eclipse anything ever held before in that industry has approached definite form with the announcement of tentative dates, probable speakers and other interesting data.

The Congress will be held at Chicago April 14th, 15th and 16th, according to Dr. Wilson Compton, Secretary-Manager of the National Lumber Manufacturers Association, who is busily engaged in planning the details of the proposed affair. It will immediately precede the annual meeting of the National Association on April 17th and it will take in all branches of the industry in a nation-wide discussion of export and domestic problems.

Trade Extension, Lumber Economics and Logging Operations will be among the subjects for the Congress, while the list of speakers so far prepared includes W. B. Colver, chairman of the Federal Trade Commission, tariff commissioner, and B. S. Cutler, chief of Bureau of Foreign and Domestic Commerce.

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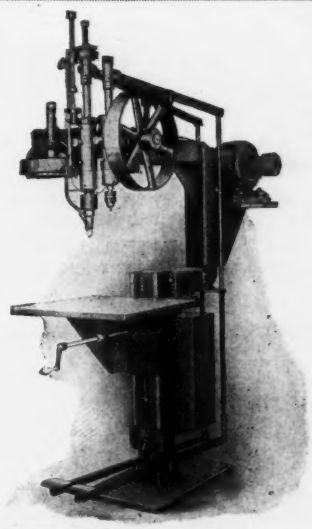

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D. C., 1918. (Special agents series no. 171.)

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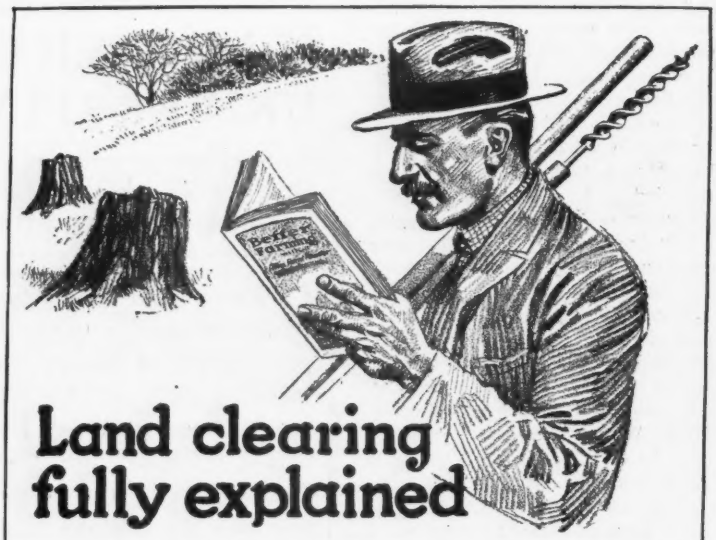

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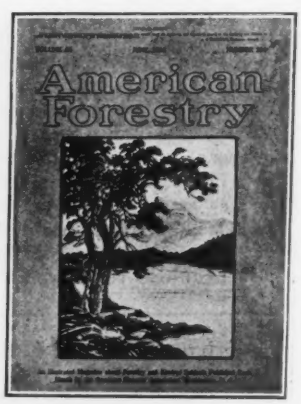


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